A CROSS SECTIONAL STUDY ON DOMESTIC ACCIDENTS IN SELECTED VILLAGES IN SANKARANKOVIL TIRUNELVELI DISTRICT, TAMIL NADU – 2014.

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M.D. BRANCH XV

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CERTIFICATE OF THE GUIDE

This is to certify that the dissertation titled **"A CROSS SECTIONAL STUDY ON DOMESTIC ACCIDENTS IN SELECTED VILLAGES IN SANKARANKOVIL IN TIRUNELVELI DISTRICT, TAMIL NADU – 2014"** a bonafide work carried out by **Dr. R. TAMILARASI**, Post Graduate student in the Institute of Community Medicine, Madras Medical College, Chennai-3, under my supervision and guidance towards partial fulfillment of the requirements for the degree of M.D. Branch XV Community Medicine and is being submitted to The Tamil Nadu Dr.M.G.R. Medical University, Chennai.

Signature of the Guide

Dr. V.V. ANANTHARAMAN,
B.Sc., M.D., M.B.A., M.Med., D.P.H., D.D.,
Director,
Institute Of Community Medicine
Chennai- 600 003

Place : Chennai.
Date :

CERTIFICATE

This is to certify that the dissertation titled **"A CROSS SECTIONAL STUDY ON DOMESTIC ACCIDENTS IN SELECTED VILLAGES IN SANKARANKOVIL IN TIRUNELVELI DISTRICT, TAMIL NADU – 2014"** a bonafide work carried out by **Dr. R.Tamilarasi**, Post Graduate student in the Institute of Community Medicine, Madras Medical College, Chennai-3, under the guidance of **Dr.V.V.Anantharaman**, **B.Sc., M.D., M.B.A., M.Med., D.P.H., D.D.,** towards partial fulfillment of the requirements for the degree of M.D.Branch XV Community Medicine and is being submitted to The Tamil Nadu Dr.M.G.R. Medical University, Chennai.

Dr. R.Vimala , MD.,
Dean,
Madras Medical College,
Chennai -600 003

Dr. V.V.Anantharaman,
B.Sc., M.D., M.B.A., M.Ed., D.P.H., D.D.,
Director,
Institute of Community Medicine
Madras Medical College,
Chennai- 600 003

DECLARATION

I, solemnly declare that the dissertation titled **"A CROSS SECTIONAL STUDY ON DOMESTIC ACCIDENTS IN SELECTED VILLAGES IN SANKARANKOVIL IN TIRUNELVELI DISTRICT, TAMIL NADU – 2014",** was done by me under the guidance and supervision of **Dr.V.V.Anantharaman**, **B.Sc., M.D., M.B.A., M.Med., D.P.H., D.D.,** Director, Institute of Community Medicine, Madras Medical College, Chennai-3. The dissertation is submitted to The Tamil Nadu Dr. M.G.R. Medical University towards the partial fulfillment of the requirement for the award of M.D. degree (Branch XV) in Community Medicine.

Signature of the candidate

Place: Chennai.

Date: **(Dr. R.TAMILARASI)**

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LIST OF ABBREVIATIONS

DALY	-	Disability Adjusted Life Years
DLHS	-	District Level Health Survey
GBD	-	Global Burden of Diseases
HUD	-	Health Unit District
ICD 10	-	International Classification of Diseases-10
IIPS	-	International Institute of Population Sciences
LARES	-	Large analysis and review of European housing and health status
MOHFW	-	Ministry of Health and Family Welfare
NIMHANS	-	National Institute of Mental Health and Neuro Sciences
NCRB	-	National Crime Records Bureau
SEAR	-	South East Asian Region
US	-	United States of America
WHO	-	World Health Organisation

A CROSS SECTIONAL STUDY ON DOMESTIC ACCIDENTS IN SELECTED VILLAGES IN SANKARANKOVIL, TIRUNELVELI DISTRICT TAMIL NADU- 2014.

Abstract :

Background:

Injuries are a major public health problem. In ancient days injuries were considered as unavoidable. But in the past decades, epidemiology and preventable nature of injuries have been understood better. The higher health burden of injuries are due to recently increasing technologies, changes in life style, increasing population leading to crowded and unsafe settlements, and increasing use of electrical and other devices. Today danger of injury presents not only in roads but also at home, working places and also in playgrounds.Previous studies reported the prevalence of domestic accidents varying from 1 to 30%. Accidents which occurs at home or its immediate surroundings are called domestic accidents and it does not include accidents related to traffic, workplace, or sports. In developing countries the problem is more severe particularly in rural areas due to informal dwellings.

Objectives:

This study is done to find out the prevalence andthe associated risk factorsof domestic accidents in rural areas and to find out the treatment seeking behaviour of the people for domestic accidents.

Materials and methods:

A cross sectional community based study was done using a validated semi-structured questionnairein Sankarankovil HUD from December 2013 to September 2014. Multi stage cluster sampling was used. One year recall period was used to find the prevalence of domestic accidents.Socio demographic details,Injury details and treatment details were obtained by interview and by reviewing the records that were with the participants.

Results:

A sample size of 480 was included in the analysis. The overall prevalence of domestic accidents was 11.7%. Domestic accidents were common in extreme age groups i.e. children 0-14 years (14.4%) and elderly >60 years (31.6%) and males. Fall was found to be the commonest mode of injury (42.9%). Nearly 43% of injuries were mild injuries like abrasions and lacerations. Lower limbs (42.9%) were found to be the commonly affected body part. Most (43%)of them injured during house hold works and in immediate surroundings (51.8%) of the houses. 41% of the injured took treatment in home itself, 39% got inpatient treatment and 20% had only outpatient treatment. Almost 93% treated got improved, 3.6% developed deformity/disability and 3.6%were improving. Presence of slippery floor, presence of open fire, presence of sharp objects within reach were found to be strongly associated with fall, burns, injury by sharps respectively. Semi-pucca and kaccha house types were significantly associated with the accidents in home than the pucca house.

Conclusion:

So the study findings concluded that there is some association between risky home environment and domestic accidents and we can reduce the accidents if the risky environment is modifiedand by giving proper supervision and care to the dependant age groups.

Key words: Domestic accidents, Home environment, Injuries, Rural area.

1. INTRODUCTION

Injuries are a major public health problem. In ancient days injuries were considered as unavoidable accidents. But in the past decades, the nature of injuries, epidemiology and preventable nature of injuries have been understood better.[1]

While majority of the communicable diseases, infectious diseases, nutritional diseases are showing decreasing trend in most of the developing countries, the injuries and other non-communicable diseases are showing increasing trend in last few decades. Injuries are becoming a hidden, unrecognized epidemic. Though injuries are an unrecognized problem worldwide, they are becoming the major cause for most of the hospital admissions, disabilities, and mortality. But most of the injuries are predictable and preventable.[2]

Injuries are a major threat to health in every part of the world. Injuries are manmade and human behaviour related disorders. But injuries are leading to a sense of apathy as they are perceived as an event that occurs in day to day life of human beings. Injuries lead to many disabilities and death in many parts of the world, but are not equally distributed in every parts. Some people have more risk to be injured while others have less chance to get injured. This problem vary according to age, sex, socio economic status, life style and the area of living.[3]

The higher health burden of injuries are due to recently increasing technologies, industrialization, changes in life style, increasing population leading to crowded and unsafe settlements, and increasing use of electrical and other devices. Not easily accessible and not affordable health services are also responsible for the increasing disabilities and other health burdens due to injuries.[4]

Mortality rate is most commonly used to describe the magnitude of any type of health related problems. But injuries are responsible for increased burden of disability and other minor illnesses. So the non-fatal outcomes of injuries must also be recorded to know the exact burden of illness due to injury.[2]

Though the mortality rates are increasing due to injuries, the people who are living after injuries had temporary and permanent disabilities or some consequences of injuries like depression and behavior changes like smoking, alcohol consumption, and drug usage as a result of disability due to injuries. Only few hospital-based and population-based studies have revealed the real magnitude and impact of the problem in the South East Asian Region (SEAR). Road traffic Injuries, falls and burns are found to be the three leading causes of injury.[3, 5]

In most parts of the world, the injuries are recognized as public health problem and preventive measures have been initiated while in some parts of the world injuries are being recognized now only. [5]

The recognition of injury as a public health problem has been a recent phenomenon in India. While there are million deaths are due to injuries in India, the information about injuries in India is not adequate. The police reports and other injury surveillance reports have information only on deaths due to injuries. But the original data on magnitude of both fatal and nonfatal injuries are inadequate.[3,4]

Injuries account for 10% of deaths in India with variations across countries. Males showed three times higher predilection for injuries (included both intentional and unintentional injuries) in comparison to females as per the records available in India. The

injuries and deaths were most common in the productive age group i.e. 15 – 49years. While injuries have declined in many developed parts of the world, it has been steadily rising in India and some measures to control injuries have been taken. But still the systematic and scientific efforts to control injury are yet to start. [3,4]

Danger of injury presents today not only in roads but also at home, working places and also in playgrounds. Accidents may be one of the cause for morbidity and mortality. Especially, accidents at home environment lead to minor injuries though mortality may be less.[6]

Accidents which occurs at home or its immediate surroundings are called domestic accidents and it does not include accidents related to traffic, workplace, or sports. In developing countries the problem is more severe particularly in rural areas due to informal dwellings. Injuries, disabilities, and deaths due to domestic accidents are very important. In public health term it is a major epidemic.[7,8, 9]

Some hospital based studies have focused mainly on the pattern of injuries due to domestic accidents which provide mostly the prevalence of serious or severe injuries and only partially represent the minor form of injuries.[10]

As a result of accidents at home, not only the injured person has distress, it also affects all the members in the family. Severe form of injuries cause unfortunate events both to the individual who got injured and also to the family members by causing any disabilities, loss of earnings etc. Even minor form of injuries are also important because they can cause distress to all members in the family and disturb earnings at least for some days or weeks.[11]

The costs due to accidents are very difficult to measure. Apart from the cost due to medical care, the costs due to pain, family disruptions, disabilities cannot be measured. Each accident can cause physical and mental effect on the individual who got injured and the family members.[12]

Children are more prone to get injured in domestic accidents. Elderly people are also prone to accidents in home environment due to their physical impairments like vision impairment, hearing impairment, restricted and slow movements, osteoarthritis, etc. [7, 8]

Most of the studies done on domestic accidents are confined to particular age group (Children & Elderly) and specific type of injuries (Fall & Burns).Community based studies including every type of domestic accidents are very rare especially from rural areas in Tamil Nadu. The magnitude and characteristics of domestic accidents vary between rural and urban areas due to the living conditions, life style factors and accessibility to health care and attitude towards health. [13]

As most of the people are residing in rural areas in India, this study tries to find out the characteristics of occurrence of domestic accidents in a rural area and the treatment seeking behavior of the people for domestic accidents.

Objectives of the Study

2. OBJECTIVES OF THE STUDY

1. To find out the prevalence of domestic accidents in selected villages in Sankarankovil HUD, Tirunelveli district in 2014.

2. To study the associated risk factors for domestic accidents in selected villages in Sankarankovil HUD, Tirunelveli district in 2014.

3. To find out the treatment seeking behaviour of the people for domestic accidents among the same study population.

Review of Literature

3. REVIEW OF LITERATURE

3.1. INTRODUCTION:

As given in the article by Baker et al., 1987, the word Injury is derived from the Latin words "in+jus" meaning "not right". The term injury, refers to damage to humans caused by acute exposure to physical and chemical agents.[14]

J.E.Gordon had done the pioneering work on defining agents of injury; he made a proposal that injuries were characterized by epidemic episodes, seasonal variation, long-term trends and demographic distribution like infectious diseases. [14]

The cause list used in the GBD 2000 project has four levels of disaggregation and includes 135 specific diseases and injuries.Overall mortality is divided into three broad groups of causes, as follows:

Group I	:	Communicable diseases, maternal causes, conditions arising in the perinatal period and nutritional deficiencies;
Group II	:	Noncommunicable diseases;
Group III	:	Intentional and unintentional injuries.[15]

In terms of public health, the National (US) Committee for Injury Prevention and Control has redefined injury as "unintentional or intentional damage to the body resulting from acute exposure to thermal, mechanical, electrical, or chemical energy or from the absence of such essentials as heat or oxygen". However, it is still not clear from this definition whether the damage to the body is only physical or includes stress as well as mental damage.[14]

An injury is damage to a body organ which occurs rapidly and is visible, with the causative mechanism being sudden energy transfer .[16]

Four factors that differentiate injury from other health conditions are: (i) a definite interaction between agent,host and environment, (ii) acuteness of the event, iii) varying severity, and (iv) chances of repetitiveness. [17]

The burden of non infectious diseases are increasing where the burden due to infectious conditions were decreasing. Among the non infectious diseases, accidents are the most important. Domestic accidents are most important among them.[18]

In various studies done on domestic accidents low socio economic status, poor housing conditions, extreme age groups, underlying medical conditions and lack of safety measures were associated with risk of domestic accidents.These domestic accidents may lead to economic loss, disability, deformity,etc. [18]

3.2. CLASSIFICATION OF INJURY:

A commonly used method is to classify injuries as intentional, unintentional and undetermined injuries, based on intent of injury occurrence. Unintentional injuries are also referred to as accidental injuries, while intentional injuries are self-inflicted or caused by others. The latter include suicides, homicides, injuries due to violence against women, children and elderly, those due to wars, riots and conflicts, etc.[3]

A second common method of classifying injuries is according to the mechanism which caused the injury, like road traffic crashes, poisoning, falls, fires/burns, drowning, fall of external objects and others.[3]

A third method of classifying injuries is according to place of occurrence like road injuries, home injuries, sports injuries and work related injuries based on place of occurrence of injury. [3]

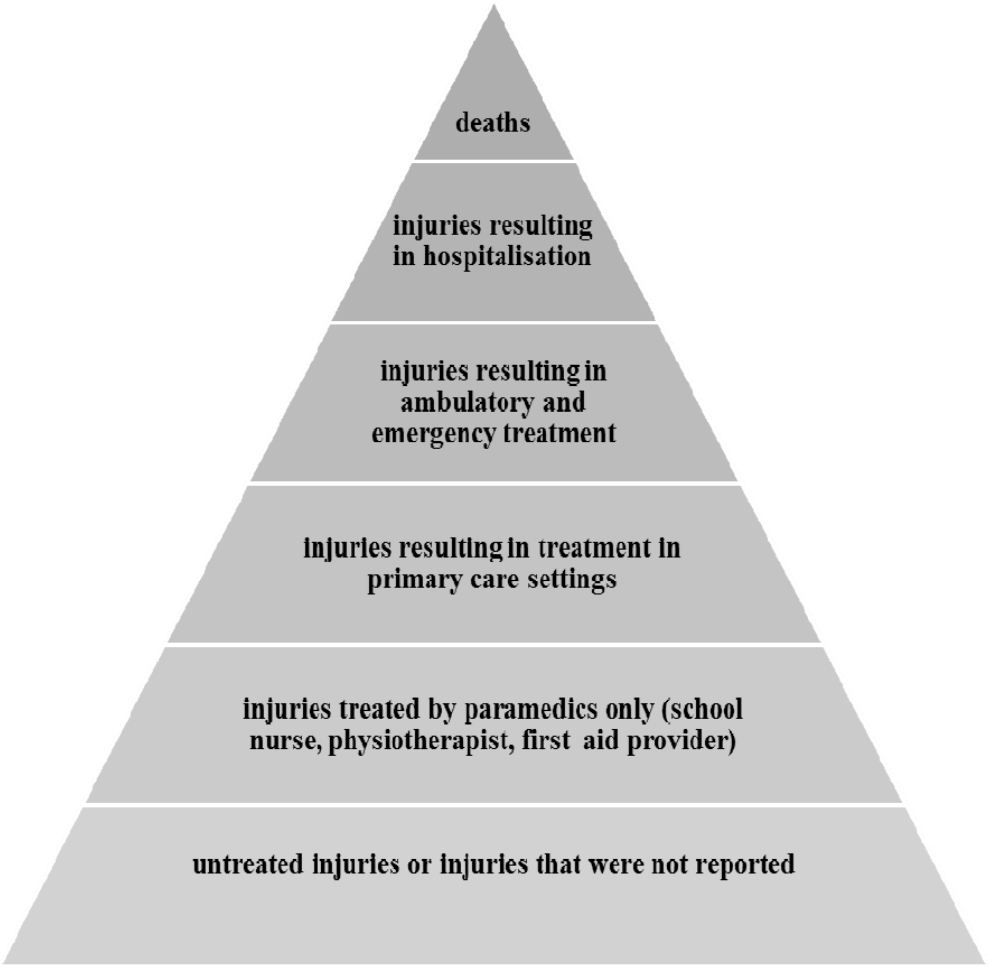
The fourth method is based on anatomical types and location of injuries depending on body organs injured like head injuries, facial injuries, injury to long bones etc. A continuation of this is seen as fractures, contusions, haemorrhage, etc.[3]

International Classification of Diseases and International Classification of External Causes of Injuries are commonly used for systematic and scientific classification of injuries all over the world. A particular classification chosen is primarily determined by the purpose of a (or more)programme(s) and availability of resources. Commonly, the first three methods (viz., intention, mechanism, place) are preferred, as changes can be made in products and environment to prevent injuries occuring in future.

Use of injury spectrum is another useful method to understand injuries. This method maps an injury over time, starting with its exposure followed by the event through the occurrence of injury time finally resulting in disability or death. Understanding this time spectrum can help in developing interventions that can either prevent injury or lessen the impact of injury.[19]

3.3. INJURY PYRAMID

Fig. 1: Injury pyramid



Injury pyramid is nothing more than a representation of the statistics of injuries. All deaths due to injuries or accidents represent only a small fraction of the injured. So the numbers of fatal and non-fatal injuries are depicted in a graphical representation which is usually a pyramid. The shape of the pyramid is determined by various factors. In addition to the severity of injury the availability of the health services, accessibility to health services, attitude of the people towards health, and the quality of the available data.[19]

3.4. BURDEN OF UNINTENTIONAL INJURIES:

There was no separate data available for domestic accidents. Only data related to burden of unintentional injuries were available which includes accidents or injuries occurred in all settings such as road, work, home.

3.4.1. Global burden:

Around 12% of the disease burden in the world was due to injuries (in terms of disability-adjusted life years [DALYs] lost) and 9% of all deaths. Injuries are one of the ten leading causes of death throughout the world, and create a pandemic. It is estimated that injury causes 5 million death in a year, giving a mortality rate of 837 per million per year due to injury worldwide.[1]

Unintentional injuries are more prevalent throughout the world than the intentional injuries.Mortality due to injuries was more common in the productive age group of 15–44 years which constitute nearly 50% of injury-related mortality. 25% of drowning deaths and 15% of deaths due to burns are occuring in children .[1]

In developing and industrialized countries 10-30% of all hospital admissions were due to accidental injuries.[20]

3.4.2. Burden in South East Asia Region:

Indirect studies of WHO and GBD study suggested that unintentional injuries accounted for 3.9 million deaths, of which low and middle-income countries costitute over 90% of the of injury-related mortality and morbidity. Recent evidence suggests that mortality is six times greater in victims in a low-income setting who had life-threatening

injury.53.1% of the burden of injury in the world and 27% of the mortality due to injuries are solely contributed by South-East Asia (SEA) Region alone.[1,21,22]

Main effect of the injury was faced by young people in this region. When the children are being protected from infectious diseases and diseases due to nutritional deficiencies, many children are killed and made disabled by the consequences of injury. [1]

3.4.3. Burden in India:

In India only the statistics on mortality are available. Non-fatal injuries are under reported. According to Bengaluru injury surveillance programme, the number of injury deaths are high (39%) in home environment next to road (43%). Non-fatal injuries are also high in home (25%) next to road traffic injuries (57%).

As per the National Crime Records Bureau report, 4, 00,517 accidental deaths have occurred in India in the year 2013 i.e. 1.4% rise in the incidence than the previous years. Tamil Nadu is the third leading state (8.3%) in having accidental deaths next to Maharashtra (9.4%) and Madhya Pradesh (9.4%). Child injuries constitute 6.1% of total injuries. The accidental death rate was 30.7% for India as a whole and 48.5% for Tamilnadu.[23]

District Level Health Survey report IV-2012-2013 which is done by MOHFW and in collaboration with IIPS, has included the prevalence of injuries as an indicator. According to that the total prevalence of any injury in Tamil Nadu was 4.5% and for rural area 5.1% and for urban area 3.9%. In Tirunelveli district the total prevalence of injury was 3.8% and in rural area it was 3.7% as per the DLHS-IV report.[24]

National representative survey of 1.1 million homes in India in 2005, revealed that 0.6 million deaths were due to unintentional injury. This finding was more than the findings of NCRB which reported only 0.3 million deaths due to unintentional injury but more that the indirect estimates of WHO which showed 0.8 million deaths. It was due to the fact that WHO reports relayed on the causes of death reports and NCRB reports were based only on the police records. In the same year, world bank assisted study estimated that 12% of total loss of DALYs were due to injuries worldwide.[25]

Gururaj et al.2000 and Varghese and Mohan 2003 reported that the review of Indian studies and observations by other agencies indicate the ratio of deaths to serious injuries needing hospitalization to minor injuries as 1:20:50. In Bangaluru and Haryana this ratio was 1:18:50 and 1:29:70, respectively. [26,27]

A large-scale population-based survey done by Gururaj and Suryanarayana et al in 2004 of 96,569 individuals from Bangaluru revealed a ratio of 1:20:40 for deaths:hospitalizations:injuries.[28]

In a report by gururaj et al in 2005, nearly 42,500,000 persons had minor injuries, incapacitating them for short or long periods during 2005. Nearly 70% of these deaths and injuries occurred among men of 15–44 years of age which is the productive age group. Eighty per cent of these deaths and injuries had occurred in rural areas. [29]

Studies on domestic injuries are virtually non-existent in India or underreported. The type of domestic injury is often determined by several host factors (age, sex, residence,co-morbidity, alcohol and drugs, etc.), agent factors (a number of domestic products which are

commonly used by people for day-to-day activities) and environmental factors (type of housing, flooring, roofing, safety environment,etc.).[3]

Studies on traumatic brain injuries by Gururaj et al in 1993 and 2005 at NIMHANS revealed that falls were the second leading cause of deaths and injuries contributing to 20%–30% of total traumatic brain injuries. Nearly two thirds of falls occurred at home. Children and the elderly accounted for 30%–40% and 10%–20% of the total falls respetively.[29,30]

A population based study done by Sathyasekaran et al in 1996 noticed that the incidence of domestic injuries was 55/1000, 52/1000, 61/1000 and 56/1000 in the age groups of 0–14 years, 16–30 years, 31–45 years and 45+ years, respectively. Falls often result in variety of musculoskeletal injuries including fractures. The outcome of the fall is mainly dependent on the nature of the landing surface, height of fall and use of any protective devices. Fractures constituted 7.5% of total injuries; fractures of the skull and face, and lowerlimbs accounted for 52% and 24%, respectively. Seventy seven per cent of these occurred in the age group of 15–44 years, with a male to female ratio of 3:1. [31]

3.5. DOMESTIC ACCIDENTS:

3.5.1: Prevalence of domestic accidents:

The various community based studies done in rural settings have reported that the prevalence and the incidence of the domestic accidents vary from 1.7% to around 15%.

In a study done in a rural field practice area of a medical college in Mysore district, South India, the prevalence of domestic accidents was 9.4%.[18]

A large-scale community-based survey in Bangaluru by Gururaj and Suryanarayana in 2004 revealed that domestic injuries accounted for 14% of total injuries, with the majority occurring among children and the elderly. Whereas a survey conduted by Ashok et al in 2004, among 759 households in Bangaluru revealed that domestic injuries accounted for 6% of total injuries. [28,32]

A study done in semi urban area in Tamil Nadu, in 2013 by P Stalin et al, stated that the prevalence of domestic accident was 12.7%. This study focused on the socio-demography, housing conditions, and epidemiological factors, medical and economic consequences of domestic accidents.[33]

Mitali.G.Patel et al in a study of indoor accidents in 2011 reported that the prevalence was 3.16% in 6 months recall period. But a study done on physical injuries among children by Ray K et al in 2012 reported that 41.8% of the total unintentional injuries occurred at home.[34, 35]

A community based study on unintentional injuries in rural area of Bhopal which had most of the study participants from the working age group 15-49 years, reported that home injuries (27%) were the common injuries in that population than road accidents (24%).[36]

A secondary analysis of surveillance database on childhood unintentional injuries done in Pakistan, showed that 72% of the reported injuries were home injuries.[37]

A cross sectional study done in rural area of Texas among less than 16 years children showed that the prevalence of home injuries as 15.9%.[38]

Prevalence of domestic accidents in community based studies:

Table 1: Prevalence of domestic accidents in previous studies

S. No.	Study design	Year of study	Area of study	Duration of study	Prevalence of domestic accidents	Author
1	Prospective study	2008	Ludhiana, India.	1 year	10.62%	R Aggarwal
2	Cross sectional study	2009	Bangalore, Karnataka.	1 year	9.6%	N.R.Ramesh Masthi.
3	Cross sectional study	2005	Karamsad, Gujrat.	6 months	1.7%	Dinesh J Bhanderi
4	Longituidinal study	2011	Imphal	1 year	6.83%	Hmingthanzuala
5	Cross sectional study	2011	Bangladesh	1 year	14.62%	Md.Shajedur Rahman Shanon

3.5.2. Types of domestic accidents:

1) Falls:

"An event which make a person to come to rest inadvertently on the ground or floor. It can occur on the same level or from a height. Falls in this context means unintentional falls. Falls due to assault, intentional self-harm, from animals, burning buildings and transport vehicles, and falls into fire, water and machinery are excluded". [39]

A study done in Imphal in 2011 by Hmingthanzuala et al, showed that injury by sharps (57.1%) was the frequently occurred accident followed by falls (18.5%) in home environment.[44]

N.R.Ramesh Masthi et al in their study on domestic accidents done in Bengaluru, Karnataka in 2009,found that the prevalence of accidents were more in 1-4 years (21.9%) of age group. Falls 43.2% was most common type of accidents followed by injury from sharp and pointed instruments.[43]

R Aggarwal et al in a study in Ludhiana done in 2008, found out that falls (44.3%) were the most common injury occurring in home environment.[40]

A study on physical injuries in Sri Lanka, in 2005, done by Lamawansa et al showed that falls (18.8%) were the common injuries next to animal injuries (28%).[41]

Dinesh J Bhanderi et al in their study of domestic accidents in semi- urban community in 2005, found that falls (71%) were the predominant mode of injury followed by burns (13%).[42]

Anitha Nath et al, in 2002 had done a study on profile of accidents in under five children in Belgaum, Karnataka. In that fall (81.67%) was found to be the commonest mode of injury. One another study in India, done in infants who had domestic accidents, in 2003, the authors concluded that fall (53%) was the frequent cause of domestic accident.[45,46]

In a study done in coastal semi urban area of Tamilnadu, fall (54.4%) was the most common type of domestic accident.[33] A study done in Mysore, showed that fall (63.6%) was the most common mode of injury.[18]

Mitali et al, reported that fall (55.84%) was common mode of accident followed by burns (20.8%), electrocutions (9.3%), and injury by sharps (6.97%). Poisoning occurred in 4.65% of the participants and drowning in 2.32% of the population. [34]

The community based survey done in Bhopal stated that home injuries were common in the extreme age groups i.e. <15 years age and >60 years age group. Fall was the common mode of accident in that age group.[36]

A case control study was conducted in Rome, Italy in 2005 among elderly population 65 to 85 years. Fall (87%) was the leading cause of accident in elders in Italy.[47]

2) Burns:

"Burns occur when some or all of the different layers of cells in the skin are destroyed by a hot liquid (scald), a hot solid (contact burns), or a flame (flame burns). Burns can cause swelling, blistering, scarring and, in serious cases, shock and even death. They also can lead to infections because they damage the skin's protective barrier."[48]

A cross sectional study was done in Belgaum, Karnataka by Gowri Sankar et al in 2005 about burn injuries. Females (54.7%) and 15-44 years age group (69.60%) were

largely affected by burn injuries. 685 of cases have occurred in rural areas and kitchen accounts the place of occurrence for majority of burns cases 77.5%.[49]

In a case control study conducted in Rome, Italy in 2005 among elderly population 65 years to 85 years, 2% had burns.[47]

One another study done in infants who met with domestic accidents in India in 2003, burns occurred in 9% of the infants.[46]

Hmingthanzuala et al in their study done in Imphal in 2011, revealed that burns constitute third most common injury in domestic environment (13.6%).[44]

N.R.Ramesh Masthi et al in their study on domestic accidents done in Bangalore, Karnataka in 2009, found that burns (17.8%) was the third common injury occurring in the home environment.[43]

Akbar sheriff et al in their study on unintentional injuries among children in Kerala in 2009 revealed that 83.3% of burns cases have occurred in home settings.[50]

Burns (13%) were reported as the second most common injury next to falls, in a study done by Dinesh J Bhanderi et al on domestic accidents in semi- urban community, 2005. [42]

MD Lamawansa et al done a study on physical injuries in Sri Lanka in 2005, which showed that burn accidents occurred only in 3.5% of the study population.[41]

R Aggarwal et al in their study in Ludhiana done in 2008, found out burns have contributed to 13% of the domestic accidents.[40]

In a study done in Mysore in 2013 it was reported that burns (16%) were the common mode of injury next to fall.[18]

3) Drowning:

"Drowning is the process of experiencing respiratory impairment from submersion or immersion in liquid. Drowning outcomes are classified as death, morbidity and no morbidity. This definition of drowning was adopted by the 2002 World Congress on Drowning".[51]

In a study done in India among infants who had domestic accidents in 2003, drowning occurred in 4% of cases.[46]

4) Poisoning:

"Poisoning refers to all unintentional poisoning-related deaths and non-fatal outcomes caused by exposure to noxious substances. Intentional and other causes diagnosed by physicians as undetermined as well as those resulting from drug reactions are excluded from the ICD-10 criteria. However, if the diagnosis has not specified intention, it will be assumed automatically to be unintentional, according to ICD 10, Chapter XX (External causes of morbidity and mortality V01-Y98)."[52]

Akbar sheriff et al in the study on unintentional injuries among children in Kerala, 2009, found that poisoning was most common mode of unintentional injuries &drugs (48.1%) and household products (22.2%) are the sources of poisoning.[50]

Dinesh J Bhanderi et al in the study of domestic accidents in semi- urban community in 2005, found that poisoning have occurred in 4.3% of the study population.[42]

5) Electrical injury:

Dinesh J Bhanderi et al in the study of domestic accidents in semi-urban community, 2005, found that electrocution was responsible for 1.2% of domestic injuries. [42]

6) Fall of external objects:

R Aggarwal et al in the study done in Ludhiana in 2008, reported that accidents by inanimate forces like fall of objects were the most common injury occurred in home environment next to fall (44.3%).[40]

In a study on physical injuries in Sri Lanka in 2005, it was reported that objects fallen on the victim has contributed to 17.6% of domestic accidents.[41]

7) Injury by sharps and pointed objects:

Injury from sharp and pointed instruments (27%) were the cause of domestic accidents next to fall as reported in a study on domestic accidents done in Bengaluru, Karnataka in 2009 by N.R.Ramesh Masthi et al.[43]

R Aggarwal et al in the study in Ludhiana in 2008 found out injury by sharps contributed 34.6% of domestic accidents.[40]

A study on physical injuries in Sri Lanka in 2005 done by Lamawansa et al had revealed that cut injuries due to sharp objects (11.8%) also a major cause for domestic accidents.[41]

In a cross sectional study done in Mysore in 2013, injury by sharps have occurred in 9% of the study population.[18]

8) Animal related injuries:

Animals can be involved in injuries in diverse situations. The most common animal-related injuries are envenomation by snakes, scorpions, attack/bite by dogs, bulls or ants and other animals. Injuries can also occur as a result of a fall from an animal that is being ridden (most commonly horses) or being crushed by it. Animal-related injuries may result in disease that is carried by the attacking animal, such as rabies, or include allergic responses such as after bee/wasp stings.[53]

A study done by MD Lamawansa et al on physical injuries in Sri Lanka in 2005 showed that accidents occurring in home environment are mainly due to animal bites (28.2%) in the study population in Sri Lanka.[41]

3.5.3. Nature of injuries:

N.R.Ramesh Masthi et al in the study on domestic accidents done in Bangalore, Karnataka in 2009 found that abrasions (49%) were mostly occurred type of injury followed by lacerations (33%), contusion (5%), fracture (3%), and crush injury (2%).[43]

Anitha Nath in 2002 had done a study on profile of accidents in under five children in Belgaum, Karnataka. In the study abrasions contributed to majority of injury type followed by cuts and lacerated wound. [45]

3.5.4. Place of accident:

R Aggarwal et al, in their study in Ludhiana, 2008, found out that Living room (20.6%) was the predominant place of occurrence of injury followed by kitchen (16.3%), bathroom (2.3%), and other places (7.3%). [40]

N.R.Ramesh Masthi et al in their study on domestic accidents done in Bangalore, Karnataka, 2009, found that Kitchen (46%) was the predominant place of injury followed by yard (40%), living room (11%), and bathroom (3%).[43]

The finding of Hmingthanzuala et al study done in Imphal in 2011 was the occurrence of domestic accidents was high outside (56.8%) the house as compared to inside the house (43.2%). [44]

In a study done in rural community of Bangladesh in 2011 done by Dr. Md. Shajedur Rahman Shawon, it was found that majority of the accidents had occurred in courtyards 49.7%, 15.8% in kitchen, 4.7% in bathroom, and 17% in other places. [54]

A case control study was conducted in Rome, Italy, in 2005 among elderly population 65years to 85 years. It showed that 33% of accidents have occurred in living room, dining room, and corridor. 22% of cases occurred in bedroom and 11% in bathroom.[47]

A cross sectional study done in 2013, the most common place of accident was found to be Courtyards (49.7%) followed by Kitchen (15.8%), Bedroom (9.4%), Bathroom (4.7%), Cattle shed (3.5%), others (17%).[18]

3.5.5. Parts of the body involved:

Akbar sheriff et al in their study on unintentional injuries among children in Kerala in 2009 found that Head region (49%) was the most commonly involved body part followed by lower limb (45%), and neck region (6.7%) was the least commonly involved part. [50]

N.R.Ramesh Masthi et al in their study on domestic accidents done in Bangalore, Karnataka in 2009 found that Upper limbs (48%) were the commonly affected part followed by lower limb (34%), head & neck (12%) , back (4%), thorax and abdomen (2%). [43]

In a study done in Chandigarh among under five children in 1997, head and trunk were the commonly involved sites. [55]

3.5.6. Time/activity during accident:

In a study done in rural community of Bangladesh in 2011, by Dr. Md. Shajedur Rahman Shawon, accidents had frequently occurred in noon time (39.2%) and in morning hours (29.2%).[54]

In a study done in Chandigarh among under five children in 1997, about 60.5% of injury cases occurred while playing in and around the home.[55]

Domestic accident occurred mostly while playing followed by household activities in a study done in Mysore in 2013. [18]

3.5.7. Place of treatment and treatment type and outcome:

MD Lamawansa et al a study on physical injuries in Sri Lanka in 2005, showed that 49.4% of injured persons had taken treatment in Government hospital, 11.8% had taken

indigenous medicine, 15.3% had taken home remedies and 23.5% of injured persons had taken treatment in private institutions.[41]

N.R.Ramesh Masthi et al in their study on domestic accidents done in Bengaluru, Karnataka in 2009, estimated that 92% of the injured persons had recovered completely, 2% had developed disability. Mortality due to domestic accidents was high in their study which was 1%.[43]

In a study done in rural community of Bangladesh in 2011, 45.5% of the domestic accident cases took treatment at home, 21.92% at private hospitals, 10.18% in government setup, and 19.6% with rural practitioners. [54]

In a study done in Chandigarh among under five children in 1997, in majority of the injured cases (69%) home treatment was taken and in 22% cases no treatment was taken and the remaining took treatment in hospital.[55]

Mitali et al stated that treatment taken at home 18.6%, outpatient care only 60.46%, in patient care 20.94%. 67.44% recovered fully, disability in 6.98% while 23.26% were not improved or in improving state.[34]

3.5.8. Risk factors:

1) Socio demographic factors:

R Aggarwal et al in their study in Ludhiana in 2008, found out that of 5-15 years age group male (36.2%), 15-45 years age group females (45.7%) were mostly affected by domestic accidents. Only 4.6% of persons were involved in >65 years of age group.[40]

The study on physical injuries in Sri Lanka in 2005, showed that more number of injuries have occurred in 25-40 years of age group (40%) than young adults(4.5%) and old age groups(5.7%). [41]

Dinesh J Bhanderi et al in their study of domestic accidents in semi-urban community in 2005, found that injuries occurred commonly in children (2.1%) & elderly age group, 15-60years (3.9%). Females (2.5% of total females) were found to be more affected by injuries than males (1% of total males). Low income (<6000) group (3.8%) are more affected than high income (>6000) group (2.7%). [42]

N.R.Ramesh Masthi et al in their study on domestic accidents done in Bengaluru, Karnataka in 2009, found that the prevalence of accidents were more in 1-4 years (21.9%) of age group.[43]

In the study done BY Hmingthanzuala et al in Imphal in 2011, the occurrence of domestic accidents was higher in 6-14 years age group (49.5%) followed by 15-45 years (27.2%) and in people who residing in kaccha houses (57.1%) than who are in pucca houses(42.9%).Males (52.6%) are more affected than females (47.4%). No significant difference was made between occurrence of accidents in nuclear and joint family. [44]

In a study done in rural community of Bangladesh in 2011, among injured persons 52.7% were males, 47.3% were females, 19-64 years age group accounted for 52% of injuries. 41.5% of injured persons were illiterate or had non institutional education and 58.5% of injured persons had institutional education.[54]

In a study done in urban area of Surat city, Gujarat among under five children by V.Choudry in 2005, the prevalence of fall injury is equal in both sexes of under five years.[56]

In a study done in Chandigarh among under five children in 1997, more number of injuries have occurred in nuclear than joint families. The injury occurrence was more in children whose mothers were working. [55]

Anitha Nath in 2002 had done a study on profile of accidents in under five children in Belgaum, Karnataka and estimated that maximum number of accidents occurred in age group of 4-5years. Males were commonly involved.[45]

In a study in India, done in infants who met with domestic accidents in 2003, the authors concluded that there was no sex difference in occurrence of accidents. More number of accidents (60%) have occurred in nuclear families than joint families. Among mothers of injured infants 53% were illiterates.[46]

Females and the respondents in the age group of 21–40 years were more commonly affected in a study done in semi urban area of Tamil Nadu. About 60% of victims received treatment.[33]

A study done in United States in 1999, reported that home was the predominant location of injury, which was responsible for nearly 4 million emergency department visits and 70000 hospitalizations. Children less than 5 years of age were at increased risk of having unintentional injuries in home environment. Injuries in males were higher than in females.[20]

A cross sectional study done in Belgaum, Karnataka by Gowri Sankar et al in 2005 about burn injuries stated that females (54.7%) and 15-44 years age group (69.60%) were largely affected by burn injuries.[49]

A cross sectional study done by Sudhir et al in Mysore city in 2013, showed that females (68.2%), age group 19-64 years, illiterates and house wives were associated with increased risk of domestic accidents.[18] Extreme age groups were involved in domestic accidents in a study by Mitali et al. [34]

Community based cross sectional study done in Aligarh in 2007showed that among 0-5 years children fall (32.4%) was the common mode of injury and in 6-15 years age group cut or stab injuries (31.6%) were common. The overall prevalence of home accidents in children in Aligarh was 19% in 6-15 years age group and 14% in the 0-5 years age group.[57]

2) Home environment:

A study done in urban area of Surat, Gujarat among under five children by V.Choudry in 2005, which mainly focused on the risk factors of domestic accidents like presence of fire, electrical appliances, household chemicals within reach of children and presence of risk of materials falling on children. This study showed that these risk factors were decreasing with increasing trend of educational status of the mothers of the children. The presence of fire within reach of children was found to be the commonest risk factors in children in the city.[56]

Turners et al, Meta analysed the studies on modification of home environment for reduction of accidents at home. In the analysis they found home environmental factors were responsible for one third of injuries. But there was no significant change in the occurrence of injuries after modifying the home environmental risk factors. They suggested that more studies were required to find out various risk factors for accidents occurring in home environment. [58]

Mirkazemi R et al in the study on injury related unsafe behaviour among households in Pune revealed that 28% of people did not have separate kitchen, 37.5% cooked at ground level, 12% had open fire, 33.5% stored kerosene in houses in non-standard containers, 32.5% stored water in an unsafe manner, and 91% stored chemicals without being locked.[59]

3) Other factors:

A case control study was conducted in Rome, Italy in 2005 among elderly population aged between 65 to 85 years. In the study, 35% of the injured elders stayed alone in the home at the time of injury but it was not statistically significant. Among the injured, 32% of them got injured while eating/drinking, and 27% occurred while housekeeping. Factors contributing to the accidents among elderly were found to be the consequence of sudden malaise (33%), distraction and inattentiveness (25%), and an inappropriate or mistaken behaviour of victim (18%). [47]

Justification

4. JUSTIFICATION

1. The public health experts have coined the name Modern Day Epidemic for accidents. Though majority of the accidents and associated morbidity & mortality occurs in developing and underdeveloped countries, information about their distribution, pattern, predisposing factors are hardly known to the epidemiologists.

2. The precise number of deaths and injuries due to specific causes are not clearly available in India.

3. There was paucity of studies in Tamil Nadu especially in rural areas on domestic accidents.

4. Most of the accident related researches are focused on Road traffic accidents and urban populations. Only few cross-sectional studies have been conducted focusing on rural communities in India.

5. Domestic accidents have not been recognized to the same extent as traffic and work-related injuries, largely because they have not been effectively reported.

6. Living conditions have a direct impact on health. Especially the accidents at home are now increasing in India especially in rural setup due to informal dwellings.

7. Injuries are preventable. So if preventive measures are taken incidence of injuries can be minimized.

Materials & Methods

5. MATERIALS AND METHODS

Study Design:

A descriptive population based Cross-sectional study.

Study Area:

This study was done in selected villages of Sankarankovil HUD, Tamil Nadu, India.

Study Duration:

This study was done from December 2013 to September 2014. The data collection was done from June 2014 to July 2014. One year recall period from the date of data collection was used to know the prevalence of domestic accidents.

Study Population:

The study population comprised of people of all the age groups and both sexes who were residing in the selected villages of Sankarankovil. The reason to choose these people was to do the study in rural area of south Tamilnadu.

Inclusion Criteria:

1) All people who were residing in selected villages of Sankarankovil.
2) All people who were willing and consent to participate.

Exclusion Criteria:

1) People who did not consent to participate.
2) Households who were not available for the first visit at the time of data collection.
3) The randomly selected household member who was not available for all the three visits at the time of data collection.

Sample size:

Sample size covered : 480

Calculated sample size : 477

Sample Size Calculation:

The sample size was calculated based on the findings of a population based cross sectional study done in 2009, in Bangalore, Karnataka, where the prevalence of domestic accidents was 9.6%. Considering Confidence level of 95%, absolute precision of 4% with 10% excess sampling to account for non- response, the sample size derived is 480.

Sample size is calculated using the formula: $N = Z_{1-\alpha}^2 pq/d^2$ * design effect

Where,

$Z_{1-\alpha}$ = standard normal deviant at 95% confidence level i.e. 1.96

p = prevalence of domestic accidents=9.6%

q = 1-p= 90.4%

d = absolute precision of 4%.

Design effect=2

Substituting all the above values in the formula,

$N = (1.96)^2 * 9.6* 90.4/ (4)^2 = 4 * 9.6* 90.4/ 16 =216.96 \sim 217$

So the sample size = 217*2 = 434

Allowing a 10% non-response rate, the sample size was,

$$434 + 43 = 477 \approx 480.$$

Method of choosing clusters:

1) In this study cluster size was taken as 20.
2) With the cluster size of 20, number of clusters needed = sample size /cluster size

   = 480/20 = 24clusters

   = 24 clusters

   Therefore, with equal cluster size of 20, sample size to be covered for 24 clusters was calculated as 24x20 = 480.
3) Sankarankovil HUD consists of 31 PHCs (Annexure 5). From all these PHCs, one PHC was selected (Subbulapuram) by simple random sampling method.
4) Cumulative population of all the 37 villages in Subbulapuram PHC was calculated. The total population was 30,955. (Annexure 6)
5) Cluster interval = cumulative population /total number of required clusters

   = 30955/24

   = 1289.8=1290
6) One number (300) randomly chosen From 1 to 1290 was taken as 1st cluster (village) and subsequent clusters were selected by adding cluster interval to the first cluster and so on till the required number of clusters were obtained. By this method, 24 clusters (Annexure 6) were selected.

Sampling Method:

The study used the multistage cluster sampling method. The first stage used simple random method followed by cluster sampling.

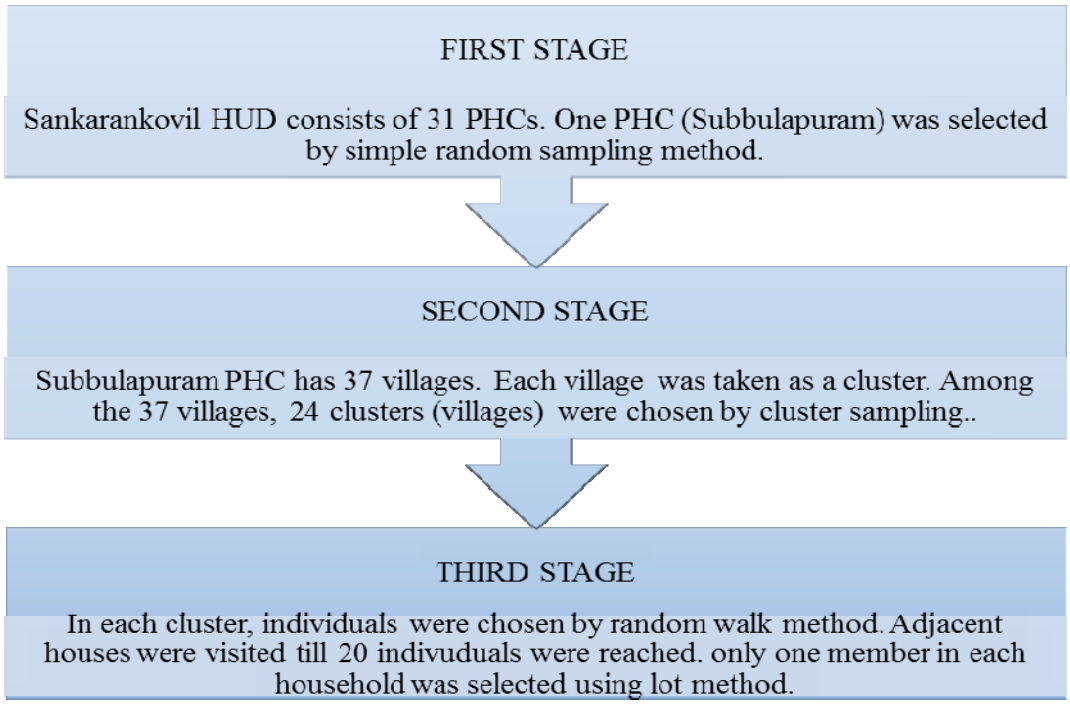
The list of all PHCs and population list of all the villages covered under PHC were obtained from the DDHS office, Sankarankovil HUD.

- One PHC (Subbulapuram PHC) was selected by lottery method (simple random sampling method) from 31 PHCs in Sankarankovil (HUD), Tirunelveli district.

- Selected PHC had 37 villages & 30,955 population. Each village was taken as clusters. Totally 24 villages were selected as clusters by cluster sampling method.

- From each cluster, 20 individuals were chosen by random walk method. A starting point was selected as the temple in each village and using right hand rule, the first house present right to the temple was taken as first house and adjacent houses were recruited continuously till 20 houses were reached.

- One person was selected from each house by simple random sampling method (lot method) after making a list of the selected household members in a descending order based on their age. If the selected person was not available maximum of 2 revisits was done within the data collection period with an interval of at least a day. If the person was not there for three visits then the household was excluded from the study. The reason for choosing only one person was the home environmental factors were same for every individual in a house. So to minimize the intra cluster correlation, only one person from each household was taken.



Data collection method:

Data collection was done in the study area after obtaining official permission from The Director, Institute of Community Medicine and the Dean, Madras Medical College, DPH, Chennai (Annexure 11), Deputy Director of Health Services, Sankarankovil HUD (Annexure 12), and medical officer of the selected PHC and the presidents of the selected villages. Approval to do the study was obtained from the Institute Ethics Committee (Annexure 10).

Questionnaire:

Validated semi-structured questionnaire (Annexure 2) was used. The questionnaire included the questions on basic socio demographic profile, home environment details, domestic accident history, and treatment history. The questionnaire was developed based on the previous literatures and by using the home safety tools given in the injury handbook for under graduates by WHO, SEAR.

Socio demographic details:

It included details about name, age, sex, per capita income, education, occupation, type of family, type of house. Socio economic status was calculated using the per capita income as per Modified B.G.Prasad socio economic status scale-2014(Annexure 3).

Home environment details:

It includes details of slippery floor, separate kitchen, type of fuel, and presence of water storage in large containers, sharps, and chemicals, drugs within reach, double exit, and presence of electrical outlet within reach.

Domestic accident details:

It has details of cause of injury, type of injury, nature of injury, presence of any risk factors, source of accident, place of accident, time of accident. Domestic accidents occurred in the last one year from the date of collection was asked.

Treatment history:

Place of treatment, type of treatment, outcome of treatment, duration of treatment / hospitalization, mode of transport to the treated place.

The questionnaire was pretested among 20 households in the villages and based on the observations, necessary modifications were made in the questionnaire. The results from the pre-test were not included in the final analysis.

After a brief introduction, the household members were listed based on their age in a descending order. Then one member was selected using lot method. The lot was taken by one of the household member preferably children. After obtaining the informed consent (Annexure 1) of the participant, the semi-structured questionnaire was completed by

personal interview of the randomly selected household member. In case of children informed consent of the parents or care givers was obtained.

Questionnaire was read out to the study participants in the same order as listed in the questionnaire and sufficient time was given to the subjects to respond. If the study subject did not understand the question, it was repeated in the same manner without probing for the answer.

Information about home environment was collected from head of the family and accident details which occurred within last one year from the day of data collection, was collected from the affected individual. In case of children or sick adults who could not answer, the accident detail was collected from parents or care givers.

Injury details and treatment details were obtained from interview and also by reviewing the records that were with the participants.

Health education regarding modification of home environment and prevention of domestic accidents was given to all the participants during the visit.

Analysis:

The collected data was entered for analysis in Microsoft Excel. This data was exported to Statistical Package for Social Sciences software version 16. Mean, standard deviations and range were employed to describe continuous variables, while frequency distributions were obtained for dichotomous variables. Associations between variables were done using Chi square tests, Fisher's exact test, and regression. A p value of less than 0.05 was considered to be significant.

Operational definitions:

1. Accident:

An unfortunate event resulting from carelessness, unawareness, ignorance or a combination of causes.[60]

2. Injury:

Acute exposure to physical agents such as mechanical energy, heat, electricity, chemicals and ionizing radiation interacting with the body in amounts or at rates that exceed the threshold of human tolerance. In some cases, injuries result from the sudden lack of essential agents such as oxygen or heat.[61,62]

3. Domestic accident:

Accidents which occurs at home or its immediate surroundings are called domestic accidents which are a community health problem and it does not include accidents related to traffic, workplace, or sports.[7]

4. Occupation:

Skilled worker: As per Minimum wages act, skilled employee is one who is capable of working independently and efficiently and turning out accurate working. He must be capable of reading and working on simple drawing circuits and process, if necessary.[63]

Semi-skilled worker: As per Minimum wages act, Semi-skilled employee is one who has sufficient knowledge of the particular trade or above to do respective work and simple job with the help of simple tools and machine. [63]

Un-skilled worker: As per Minimum wages act, Un-skilled employee is one who possesses no special training and whose work involves the performance of the simple

duties, which require the exercise of little or no independent judgement or previous experience although a familiarity with the occupational environment, is necessary. [63]

Type of family:

Nuclear family:

Family which has the married couple and their children while they are still regarded as dependents.[7]

Joint family:

It consists of a number of married couples and their Children who live together in the same household. All the men are related by blood and the women of the household are their wives, unmarried girls and widows of the family kinsmen.[7]

All the property is held in common. There is a common family purse to which all the family income goes and from which all the expenditures are met. All the authority is vested in the senior male member of the family.

Others: It includes the nuclear extended family and the three generation family.

5. Type of house:

Pucca:

A pucca structure is one whose walls and roofs are made of pucca materials such as cement, concrete, oven burnt bricks, hollow cement / ash bricks, stone, stone blocks, jack boards (cement plastered reeds), iron, zinc or other metal sheets, timber, tiles, slate, corrugated iron, asbestos cement sheet, veneer, plywood, artificial wood of synthetic material and poly vinyl chloride (PVC) material.[64]

Semi-pucca:

A structure which cannot be classified as a pucca or a kaccha structure as per definition is a semi-pucca structure. Such a structure will have either the walls or the roof but not both, made of pucca materials.[64]

Kaccha:

A structure which has walls and roof made of non-pucca materials is regarded as a kaccha structure. Non-pucca materials include unburnt bricks, bamboo, mud, grass, leaves, reeds, thatch, and etc.64

6. Home environment:

Slippery floor:

Floor which is made of by the tiles which have smooth and slippery nature. The floor which has the algae growth due to constant presence of water which usually lead to slip (e.g.: in bathrooms, back side of the house where washing of vessels done).Floors made slippery by improper cleaning.[65]

Sharps:

Sharps includes the objects with the pointed edges that can cause cut injury or lacerations. Knife , blade, pins, scissors, safety pins, sharp edged or broken furniture's, broken bottles or broken vessels which have sharp edges, sickle, other sharp edged objects used for cutting purposes.

Open fire:

Flame used for cooking which is not covered all the sides so that it allows the free flow of fire in all directions from the stove. It may be due to the improper burner also.

Familiar containers:

Containers that are used for cooking, drinking, eating purposes or used for storing food materials or water routinely such as tumbler, vessels, water bottles, etc.[66]

Electrical outlets within reach:

The devices that allow the electrically operated household appliances to be connected for power supply. These include the switches or sockets. If they are at the heights that can be easily touched or without guard cover, they were considered as outlets within reach.

Double exit:

Presence of two door ways for a house. Usually one doorway in the front and other in the back side.

7. Nature of injury:

Abrasion:

The injury due to friction against a rough or hard surface by scrapping, rubbing which lead to the destruction of skin. Superficial skin injury which doesn't cause marked or excessive bleeding or only cause oozing of blood and usually started healing within a day.

Laceration:

Injury involves deeper skin tissues and lead to heavy bleeding. The edges of the injury is clear cut and on healing may lead to scar. Mostly caused by sharp instruments like knife, blade, etc.

Contusion:

Painful swelling due to effusion of blood due to rupture of blood vessels usually caused by any blunt forces without disruption of the skin. This study includes only the contusions in the skin.

Fracture:

Any degree of discontinuity in the bone due to injury. This was diagnosed by asking history and reviewing the records if available with the person. This was based on the assumption that all the fractures will make the person to take treatment and they remember the injury.

Crush injury:

Injury due to forcible or partial tearing of tissues mostly need institutional treatment. The margins are irregular and involves deeper tissues more than skin. For example injury due to animal bites, fall over irregular hard surface.

Sprain:

Injury to one or more ligaments in joints which lead to constant pain. Mild forms will resolve in one or two days. It won't cause any external injury. Ankle and wrist are the most commonly involved joint. [67]

Others- multiple injury:

It includes one or more injuries mentioned above.

Minor injury:

In this study abrasion and laceration were considered as minor injuries.

8. Immediate surroundings:

This includes the courtyard of a house, stairs outside the house, cattle shed, just in front of the house and backside of the house which is used by the households.

9. Improved:

No residual pain or difficulty in using the injured part of the body for their routine works or if there is no deformity or disability, it was taken as improved outcome.[66]

10. Improving:

Injuries which are under healing process during the study period and which causes constant pain over the injured part only after the injury.

11. Disability:

The affected person cannot carry out certain works which is considered normal for his age and sex. It results from loss of any anatomical structure or function called impairment.

12. Deformity:

A deviation from the normal shape or size of a body part, resulting in disfigurement due to injury.

Data Analysis & Results

6. DATA ANALYSIS AND RESULTS

In this cross sectional study totally 480 randomly selected individuals in selected villages of Sankarankovil HUD, were studied to find out the prevalence of domestic accidents. The data was analysed using SPSS. Frequency tests, chi square tests and regression was used to analyse the data.

1. Simple frequency test was done for the socio demographic details of the study population- age, sex, education, occupation, marital status, religion, socio economic status, and type of family.
2. Simple frequency test was done for the home environment details like type of house, presence of separate kitchen, number of rooms in the house, type of fuel used for cooking, various other risk factors in home environment.
3. Tests were done to find the association between various factors and the presence of risk factors in home environment.
4. Frequency test was done for the domestic accident details-prevalence of Domestic accidents, causes of Domestic accidents, nature of injury, activity during injury, place of accident, time of accident, body parts involved, place of treatment, type of treatment, duration of treatment, duration of hospitalisation, outcome of treatment, mode of transport used.
5. Statistical tests were applied to find association between the socio demographic details and the occurrence of domestic accidents.
6. Tests done to find association between the type of domestic accidents and various associated factors.
7. Tests to find association between various factors influencing the treatment taken for domestic accident.

6.1. SOCIO DEMOGRAPHIC DETAILS OF THE STUDY POPULATION:

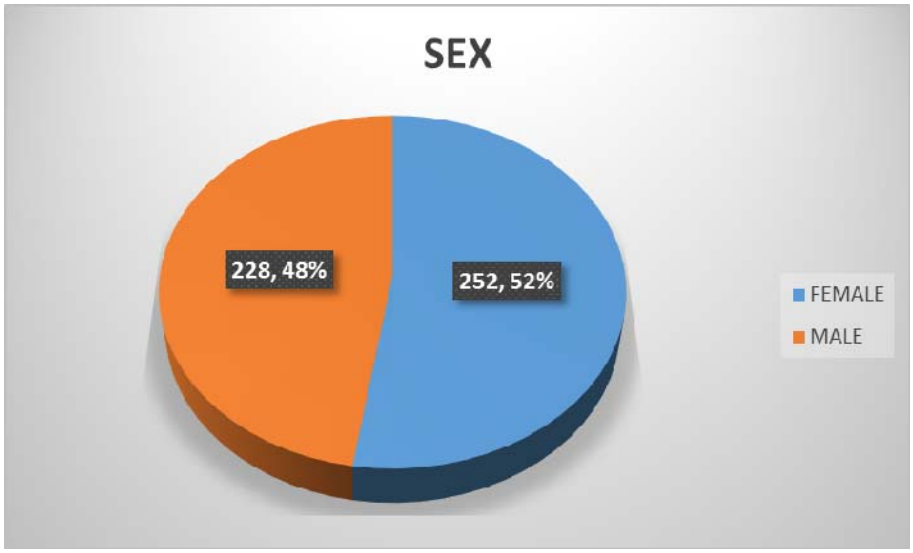
6.1.1: Age and Sexwise distribution of the study population

Table 2: Age wise distribution of the study population

Age category	Number of persons (n=480)	Percentage
0- 5 YRS	36	7.5
6 - 14 YRS	68	14.2
15 - 24 YRS	74	15.4
25 - 44 YRS	174	36.2
45 - 59 YRS	90	18.8
60 YRS & ABOVE	38	7.9
Total	480	100

Among the 480 individuals, 25-44 year age groups constitute more number of study population. <5 years (7.5%) and more than 60 years (7.9%) age group constitute less number of study population. 15-60 years age group contribute 70.5% of study population.

Fig. 2: Distribution of study population according to sex



In this study totally 480 individuals were included. Among them 228(47.5%) were males, 252(52.5%) were females.

6.1.2: Religion of the study population:

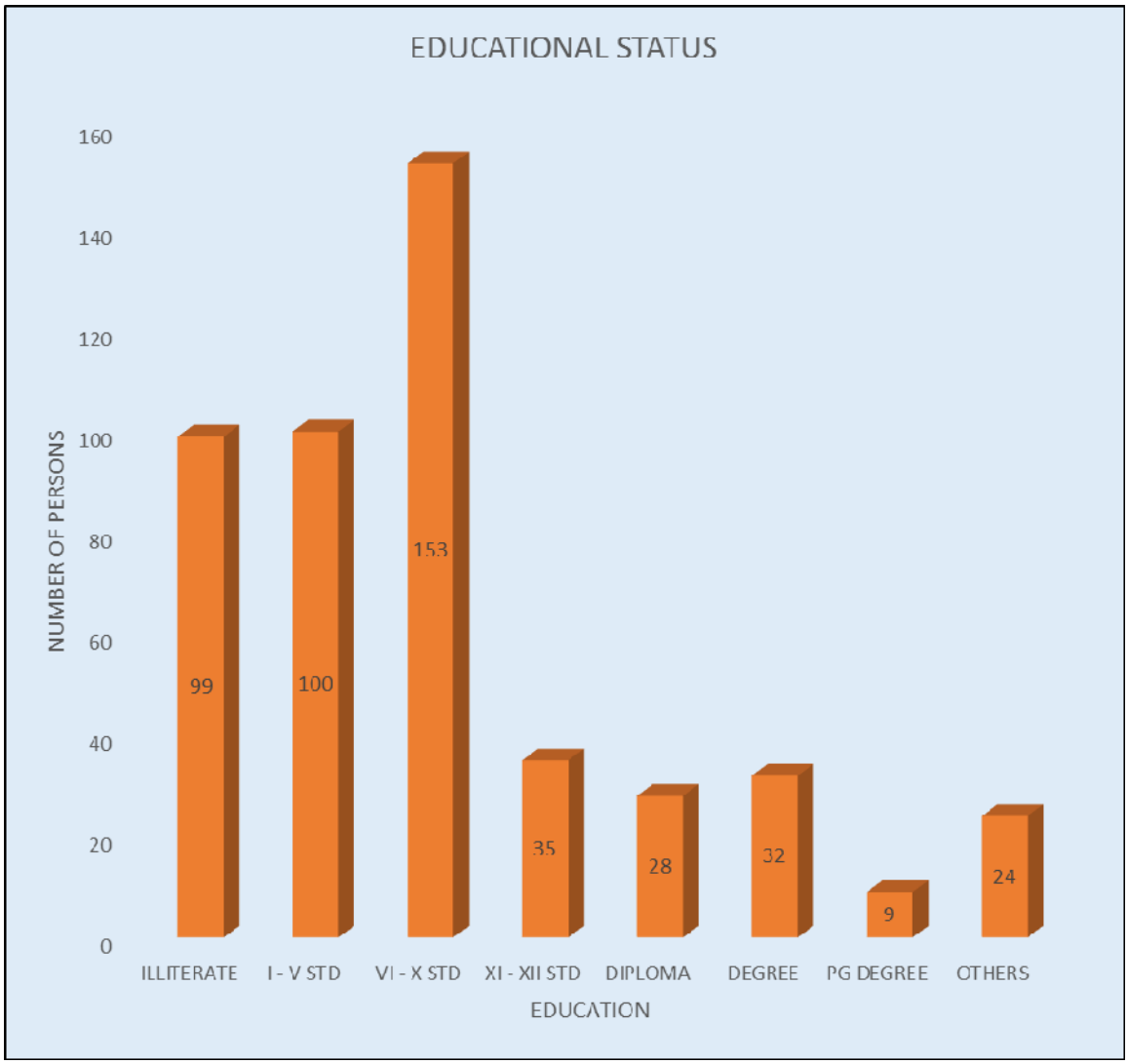
Table 3: Distribution of study population according to religion

Religion	Frequency (N=480)	Percentage
Hindu	471	98.1
Muslim	3	0.6
Christian	6	1.3
Total	480	100

In this present study among 480 individuals, 98.1% were Hindus, 1.3% were Christians, and 3 individuals were Muslims.

6.1.3: Education of the study population:

Fig. 3: Distribution of study population according to Education



In the present study nearly 20% (99) were illiterate, 31.9% (153) had completed 10th standard, totally 60% of them had school education, and others had completed any degree courses. Only 9 individuals had post graduate degree courses. Others category includes the children less than five years who didn't start their schooling 5 % (24).

6.1.4: Occupation of the study population:

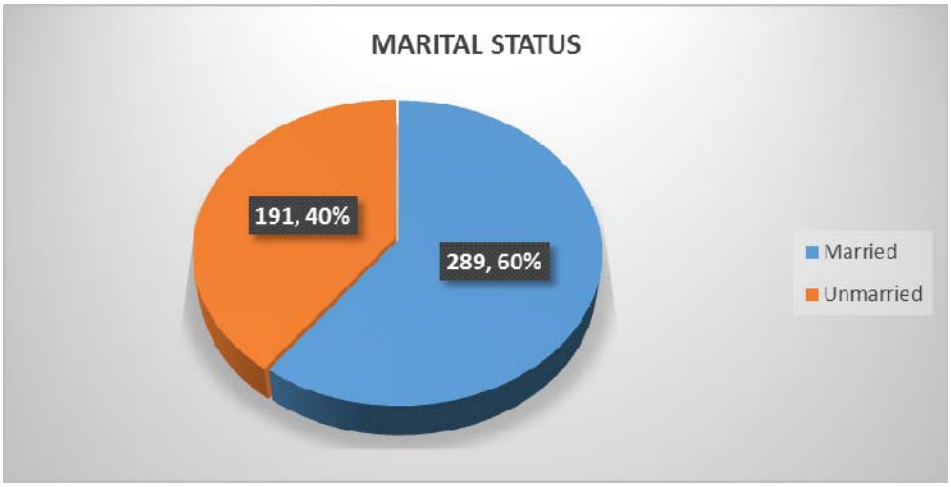
Table 4: Distribution of study population according to occupation

Occupation	Number of persons (N=480)	Percentage
Not working	38	7.9
Unskilled	227	47.3
Semi-skilled	13	2.7
Skilled	25	5.1
Self employed	9	1.9
Student	108	22.5
Professional	6	1.3
Retired	6	1.3
Housewife	17	3.5
Not applicable	31	6.5
Total	480	100

In the studied population of 480 individuals most of them were unskilled workers 47.3%, and about 22.5% were students either in school or college. Only 1.3% of them were professionals. 11.4% of people were not working at all which includes 3.5% housewives.

6.1.5: Marital status:

Fig 4: Distribution of study population according to marital status



Among the study population, most of them (60.2%) are married. 39.8% of them constitute unmarried group including children.

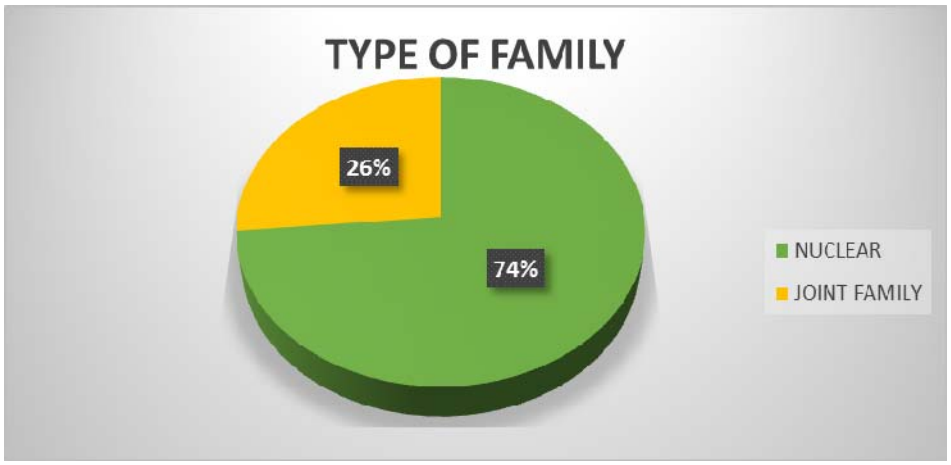
6.1.6: Socio economic status:

Fig. 5: Distribution of study population according to socio economic status

According to socio economic status, classified based on BG Prasad socio economic status scale-2014 which considers per capita income per month to determine the social status of the people in rural areas, most of the people (174) in this study belonged to class IV (36.3%) status, followed by class III 128 (26.7%), class II 90 (18.8%) and 77 (16%) were of class I socio economic status. Only small (11) percentage of population (2.2%) were of low class V.

6.1.7: Type of family:

Fig. 6: Distribution of study population according to type of family

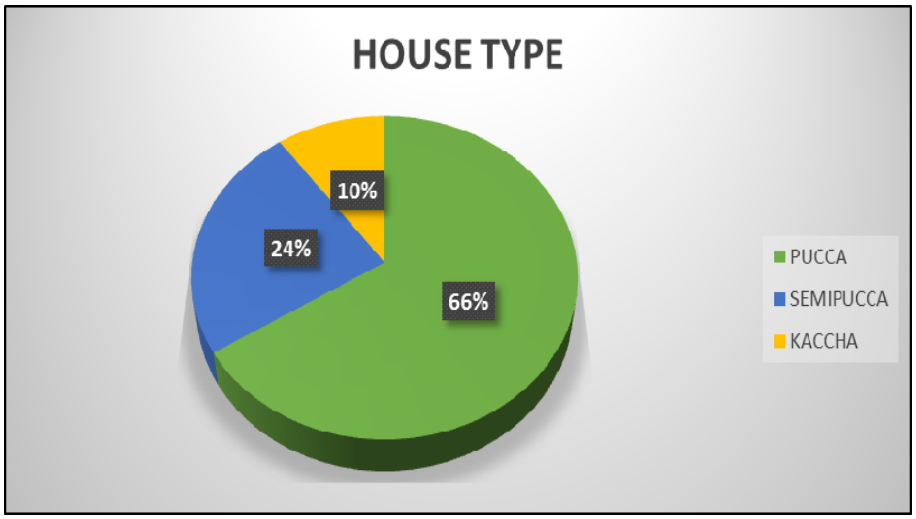


Joint family system which was said to be alive mostly in rural areas, was only found in 26.5% of the study population. Others were living in nuclear family(73.5%) only. Though they live in individual houses, the parents and children were staying close together.

6.2. HOME ENVIRONMENT DETAILS OF THE STUDY POPULATION:

6.2.1: Type of House

Fig. 7: Distribution of study population according to type of house



This figure illustrates that most of study population were living in pucca houses 66.5% which may be due to government rural housing schemes, and 24% of them were living in semi-pucca houses. But still 9.5% were in kaccha houses.

6.2.2: Total number of rooms and presence of separate kitchen:

Table 5: Presence of separate kitchen and total number of rooms in the study population

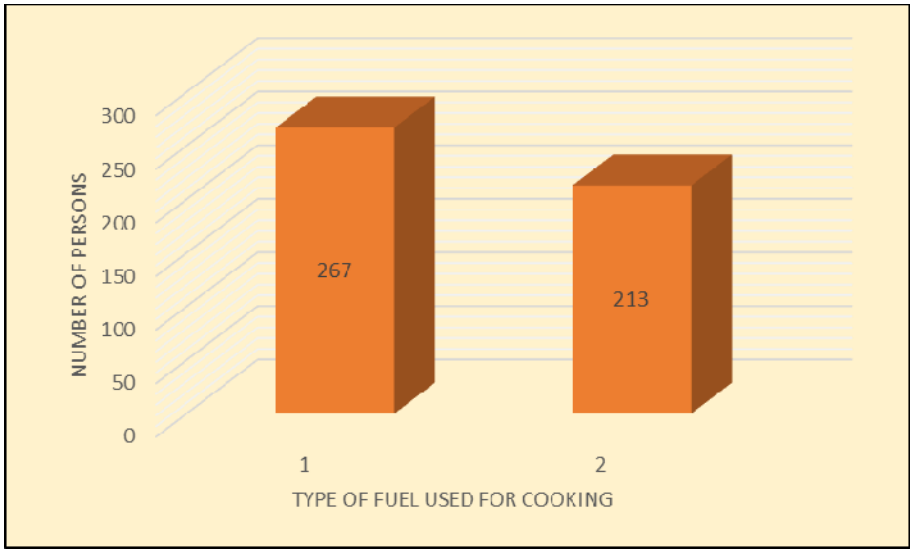
Factors		**Frequency (n=480)**	**Percentage**
Number of rooms N=480	1	18	3.8
	2	212	44.2
	3	162	33.8
	>3	88	18.2
Presence of separate kitchen N=480	Yes	295	61.5
	No	185	38.5
Total		480	100

Almost half of the houses (44.2%) in study area were having 2 rooms excluding kitchen, and one third of them had 3 rooms 33.8%.The above table describes the presence of kitchen separately in the houses of this study area. Almost 3/5 of the houses had separate kitchen for cooking 61.5%.

6.2.3: Type of fuel used for cooking:

Nearly half of the people in this study were still using the wood and kerosene stoves for their cooking purposes. And other half of the people used LPG or electricity as their fuel. Bio gas was utilized in only one family.

Fig. 8: Distribution of type of fuel used among the study population



1. LPG/Electricity/Biogas 2. Wood/ Charcoal/Kerosene

6.2.4: Risk factors in home environment:

Table 6: Distribution of risky home environment in the study population

Serial no	Home environment	Yes	No
1	Open fire (n=480)	265 (55.2%)	215 (44.8%)
2	Water storage in large containers (n=480)	205 (42.7%)	275 (57.3%)
3	Kerosene storage in familiar containers (n=480)	181 (37.7%)	299 (62.3%)
4	Double exit (n=480)	164 (34.2%)	316 (65.8%)
5	Sharps within reach (n=480)	63 (13.1%)	417 (86.9%)
6	Slippery floor (n=480)	55 (11.5%)	425 (88.5%)
7	Drainage nearby (n=480)	16 (3.3%)	464 (96.7%)
8	Medications accessibility **(**n=480**)**	12 (2.5%)	468 (97.5%)
9	Electrical outlets within reach (n=480)	10 (2.1%)	470 (97.9%)

In this present study slippery floor, sharps within reach of children, open fire, kerosene storage in familiar containers like water bottle, utensils, medicines and chemicals within reach especially to children, open electrical outlets within reach, water stored in large open containers, drainage near the house, presence of double exit were studied as risky home environments for domestic accidents.

The above table shows that the presence of open fire in the house was more prevalent in the study population almost 55% (265) of them had open fire. Next to open fire water storage in large containers was prevalent in 42.7% of the participants followed by kerosene storage in familiar containers (37.7%) present in 181 participants, presence of double exit in 164 (34.2%), sharps present within reach in 63(13.1%). Slippery floor was present in 55 participants. Electrical outlets within reach (2.1%) was least prevalent factor in this study population.

6.3: ASSOCIATION BETWEEN THE RISK FACTORS IN HOME ENVIRONMENT AND VARIOUS FACTORS:

6.3.1: Slippery floor and Type of house:

Table 7: Distribution of slippery floor according to type of house

Type of house	Slippery floor (n=480)		Total
	YES	NO	
Kaccha	8 (17.4%)	38 (82.6%)	46
Semi pucca	31 (27.0%)	84 (73.0%)	115
Pucca	16 (5.0%)	303 (95.0%)	319
Total	55 (11.5%	425 (88.5%)	480

Chi square value = 41.874 df = 2 p=0.001

This table shows that risk of slippery floor was high in kaccha houses (17.4%) next to semi-pucca houses 27% when compared to pucca (5%) houses which had low risk of slippery floors. These differences in presence of risk factor in various house types are statistically significant. This may be due to the lack of proper cleaning practices.

6.3.2: Sharps within reach and Type of house

Table 8: Distribution of sharps within reach according to type of house

Type of house	Sharps within reach (n=480)		Total
	Yes	No	
Kaccha	9 (19.6%)	37 (80.4%)	46
Semi pucca	36 (31.3%)	79 (68.7%)	115
Pucca	18 (5.6%)	301 (94.4%)	319
Total	63 (13.1%)	417 (86.9%)	480

Chi square value = 50.668 df=2 p=0.001

This table shows that risk of sharps within reach of children was high in kaccha houses (19.6%) next to semi-pucca houses 31.3% when compared to pucca houses 5.6% which had low risk of sharp objects within reach. These differences in presence of risk factor in various house types are statistically significant. This may be due to lack of space to arrange all the things.

6.3.3: Sharps within reach and Type of family:

Table 9: Distribution of sharps within reach according to type of family

Type of family	Sharps within children reach (n=480)		Total
	Yes	No	
Nuclear	40 (11.3%)	313 (88.7%)	353
Joint family	23 (18.1%)	104 (81.9%)	127
Total	63 (13.1%)	417 (86.9%)	480

Chi square = 3.764 df =1 p=0.05

The presence of sharp objects within reach of children was studied against the type of family. Joint families 18.1% have more risk of having sharp objects within reach of children than in nuclear families 11.3%. This may be due to the lack of space for the total number of persons and difficulty in accommodating all things in houses within the available small space. This was found to be significant.

6.3.4: **Sharps within reach and Number of rooms:**

Table 10: Distribution of sharps within reach according to number of rooms

No of rooms	Sharps within children reach (n=480)		Total
	Yes	No	
1	1 (5.6%)	17 (94.4%)	18
2	31 (14.6%)	181 (85.4%)	212
3	21 (13.0%)	141 (87.0%)	162
>3	10 (11.4%0	78 (88.6%)	88
Total	63 (13.1%)	417 (86.9%)	480

p=0.667 (Fisher's exact test)

Presence of sharps within reach was more in the houses with less number of rooms i.e. 2 (14.6%) or 3 rooms (13%). As number of rooms increases the risk is getting lower except for the houses with single room. This was not statistically significant.

6.3.5: Open fire and Type of house:

Table 11: Distribution of open fire according to type of house

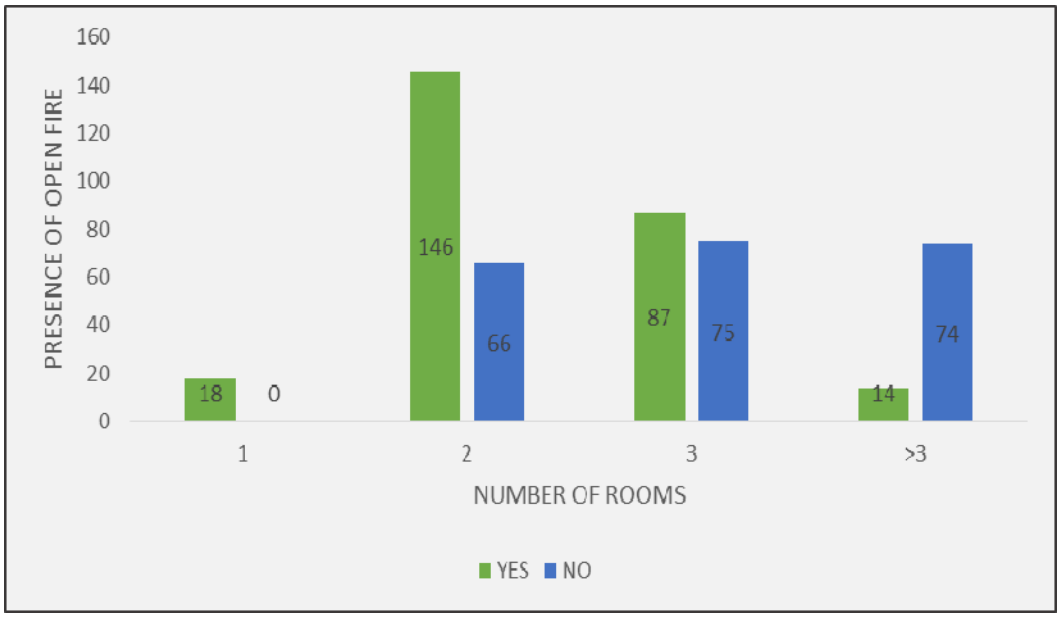
Type of house	Open fire (n=480)		Total
	Yes	No	
Kaccha	46 (100.0%)	0 (0.0%)	46
Semi pucca	64 (55.7%)	51 (44.3%)	115
Pucca	155 (48.6%)	164 (51.4%)	319
Total	265 (55.2%)	215 (44.8%)	480

Chi square= 42.982 df = 2 p=0.001

This table reveals that risk of open fire was high in kaccha houses (100%) followed by in semi-pucca houses 55.7% when compared to pucca houses 48%which had low risk of having open fire. These difference in presence of risk factor in various house types was statistically significant.

6.3.6: open fire and number of rooms:

Fig 9: Distribution of open fire according to number of rooms



Chi square= 85.708 df = 3 p=0.001

The above figure compares the presence of risk of open fire with the number of rooms. The risk of having open fire was increasing when the number of rooms were decreasing. So this association showed an inverse relationship. So the presence of open fire was found to be significantly high i.e. 100% in houses with single room than in houses with four or more rooms which had only 15.9% of risk.

6.3.7: Social Status and Open fire

Table 12: Cross tabulation between Social Status and Open fire

Social class	Open fire(n=480)		Total
	Yes	No	
CLASS I	9 (11.7%)	68 (88.3%)	77
CLASS II	48 (53.3%)	42 (46.7%)	90
CLASS III	83 (64.8%)	45 (35.2%)	128
CLASS IV	116 (66.7%)	58 (33.3%)	174
CLASS V	9 (81.8%)	2 (18.2%)	11
TOTAL	265 (55.2%)	215 (44.8%)	480

p=0.001 (Fisher's exact test)

This above table compares the various socio economic class of people with presence of open fire in their house and reveals that the risk of having open fire was decreasing when the socio economic status was increasing. So the presence of open fire risk and socio economic status have inverse relationship which was statistically significant. The 81.8% of class V people and 66.7% of class IV people have risk of open fire while the class I have only 11.7%.

6.3.8: Type of house and Kerosene storage in familiar containers:

Table 13: Cross tabulation between Type of house and Kerosene storage in familiar containers

Type of house	Kerosene storage in familiar containers (n=480)		Total
	Yes	No	
Kaccha	30 (65.2%)	16 (34.8%)	46
Semi pucca	58 (50.4%)	57 (49.6%)	115
Pucca	93 (29.2%)	226 (70.8%)	319
Total	181 (37.7%)	299 (62.3%)	480

Chi square value = 32.688 df= 2 p=0.001

This table explains that risk of storage of kerosene in familiar containers like water bottle and tumblers etc. was high in kaccha houses (65.2%) next to semi-pucca houses 50.4%% when compared to pucca houses 29.2% which had low risk of having kerosene stored in familiar containers. These differences in presence of risk factor in various house types are statistically significant.

6.3.9: Number of rooms and kerosene storage in familiar container:

Table 14: Cross tabulation between Number of Rooms and Kerosene storage in familiar containers

No of rooms	Kerosene storage in familiar containers (n=480)		Total
	Yes	No	
1	10 (55.6%)	8 (44.4%)	18
2	89 (42.0%)	123 (58.0%)	212
3	60 (37.0%)	102 (63.0%)	162
>3	22 (25.0%)	66 (75.0%)	88
Total	181 (37.7%)	299 (62.3%)	480

Chi square = 10.170 df =3 p=0.017

The above table states the association between risks of having kerosene stored in familiar containers with the number of rooms. The risk of having kerosene stored in familiar containers was increasing when the number of rooms were decreasing. So this association showed an inverse relationship. So the presence of having kerosene stored in familiar containers was found to be significantly high i.e. 55.6% in houses with single room than in houses with four or more rooms which had only 25% of risk.

6.3.10: Social class and Kerosene storage in familiar containers:

Table 15: Cross tabulation between Social class and Kerosene storage in familiar containers

Social class	Kerosene storage in familiar containers (n=480)		Total
	Yes	No	
CLASS I	11 (14.3%)	66 (85.7%)	77
CLASS II	27 (30.0%)	63 (70.0%)	90
CLASS III	59 (46.1%)	69 (53.9%)	128
CLASS IV	75 (43.1%)	99 (56.9%)	174
CLASS V	9 (81.8%)	2 (18.2%)	11
Total	181 (37.7%)	299 (62.3%)	480

p=0.001 (Fisher's exact test)

This above table compares the various socio economic class of people with presence of kerosene storage in familiar containers in their house and reveals that the risk of having kerosene storage in familiar containers was decreasing when the socio economic status was increasing. So the presence of kerosene storage in familiar containers risk and socio economic status have inverse relationship which was statistically significant. The 81.8% of class V people and 43.1% class IV people have risk of kerosene storage in familiar containers while the class I have only 14.3%.

6.3.11: Type of house and accessibility to medications:

Table 16: Cross tabulation between Type of house and Accessibility to medications

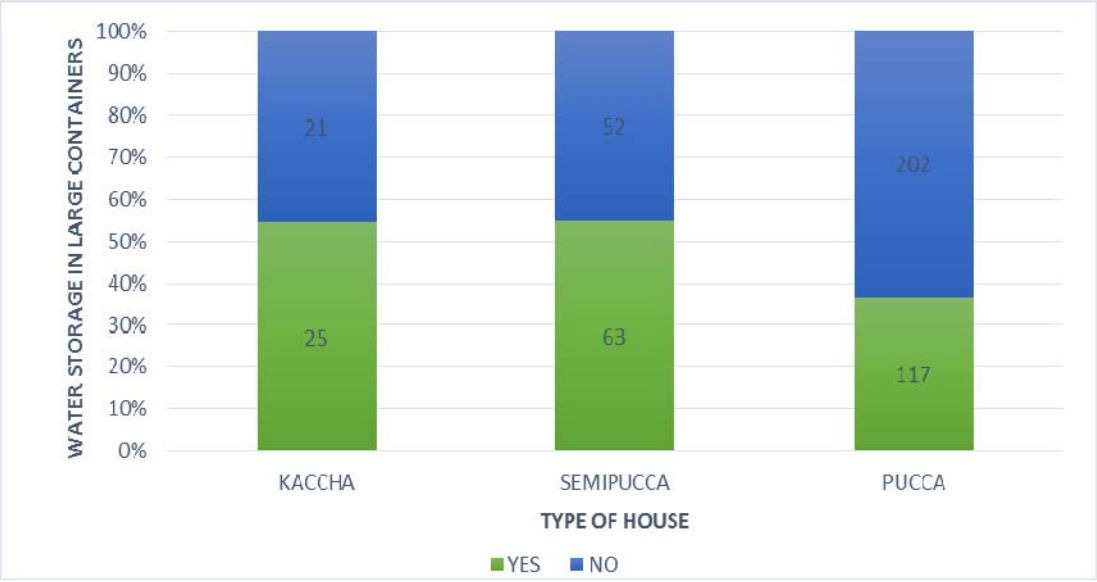
Type of house	Medications accessibility (n=480)		Total
	Yes	No	
Kaccha	4 (8.7%)	42 (91.3%)	46
Semi pucca	2 (1.7%)	113 (98.3%)	115
Pucca	6 (1.9%)	313 (98.1%)	319
Total	12 (2.5%)	468 (97.5%)	480

p=0.018 (Fisher's exact test)

The above table shows that risk of having medications within reach was high in kaccha houses (8.7%) when compared to pucca houses (1.9%)which had low risk of having stored medications within reach especially to children. These difference in presence of risk factor in various house types was statistically significant.

6.3.12: Type of house and storage of water in large containers:

Fig. 10: Cross tabulation between Type of house and Storage of water in larger containers



Chi square value = 14.141 df=2 p=0.001

Almost half of the kaccha (54.3%) and semi-pucca type (54.8%)houses were using the uncovered large containers to store water. 37% of the pucca houses also had storage of water in large container without shield. This difference is statistically significant (high in semi-pucca and kaccha houses than the pucca house).

6.3.13: Number of rooms and storage of water in large containers:

Table 17: Cross tabulation between Number of Rooms and Storage of water in larger containers

No of rooms	Water storage in large container without shield(n=480)		Total
	Yes	No	
1	4 (22.2%)	14 (77.8%)	18
2	95 (44.8%)	117 (55.2%)	212
3	75 (46.3%)	87 (53.7%)	162
>3	31 (35.2%)	57 (64.8%)	88
Total	205 (42.7%)	275 (57.3%)	480

p=0.096 (Fisher's exact test)

The above mentioned table compares the presence of risk of having water stored in large containers with the number of rooms. The risk of having water stored in large containers was increasing when the number of rooms were increasing. So this association showed a direct relationship. The presence of having water stored in large containers was found to be 44.8% &46.3% in houses with two or three rooms respectively. But this was not statistically significant.

6.3.14: Type of house and double exit:

Table 18: Cross tabulation between Type of house and Presence of double exit

Type of house	Double exit (n=480)		Total
	Yes	No	
Kaccha	10 (21.7%)	36 (78.3%)	46
Semi pucca	22 (19.1%)	93 (80.9%)	115
Pucca	132 (41.4%)	187 (58.6%)	319
Total	164 (34.2%)	316 (65.8%)	480

Chi square value= 22.096 df=2 p=0.001

The above table shows that more number of kaccha 22%and pucca houses41.4% have double exits when compared to the semi-pucca houses. So the Presence of double exit was depended on the type of house as there is significant association was found between them.

6.3.15: Number of rooms and double exit:

Table 19: Cross tabulation between Number of Rooms and Presence of double exit

No of rooms	Double exit (n=480)		Total
	Yes	No	
1	0 (0.0%)	18 (100.0%)	18
2	44 (20.8%)	168 (79.2%)	212
3	59 (36.4%)	103 (63.6%)	162
>3	61 (69.3%)	27 (30.7%)	88
Total	164 (34.2%)	316 (65.8%)	480

Chi square value= 75.003 df=3 p=0.001

As the number of rooms increases the presence of double exit was increasing. So houses with less number of rooms don't have the double exit which is a safety component in housing. This association between the number of rooms and the presence of double exit was statistically significant.

6.4. DETAILS OF THE DOMESTIC ACCIDENTS:

6.4.1: Prevalence of domestic accidents:

Table 20: Details of the domestic accidents

S.No	Domestic Accident cases	Yes	No
1	Met with accident (n=480)	56 (11.7%)	424 (88.3%)
2	Hospitalised for accident (n=56)	22 (39.3%)	34 (60.7%)

In the present community based cross sectional study conducted in 480 individuals. Among them 56 had injuries in and around home. So the prevalence rate of domestic accident was 11.7 %. (95% confidence interval 8.82% - 14.58%).

Among the injured persons nearly 50% of them were of 15-59 years of age group which constitute the productive age group of the community. Children (0-14 years) constitute nearly 26% of the injured population. 60% were males and 40% were females among the injured. Most of the injured (80%) were having low education level i.e. only had school education or no education. Unskilled workers constitute 50% of the accident cases.

Most of the injured were married 65%, from middle class group (class II, III, IV), from nuclear family 70%.Relatively more number of injured person were living in semi-pucca houses 51.8%, and in houses more number of rooms (2 or 3).

Risky home environment: when we look in to the distribution of the risky home environment slippery floor was found in 41% of accident victims and sharps within reach was found in 27%, open fire in 62.5% of the injured population in the study. 44.6% were storing kerosene in familiar containers, 7.1% had medications within easy accessibility, 51.8% were storing the water in large containers, 5.4% had open drainage near their house, and 33.9% had double exit in their home.

6.4.2: Sources of domestic accidents:

Tab 21: Distribution of accidents according to sources of domestic accidents

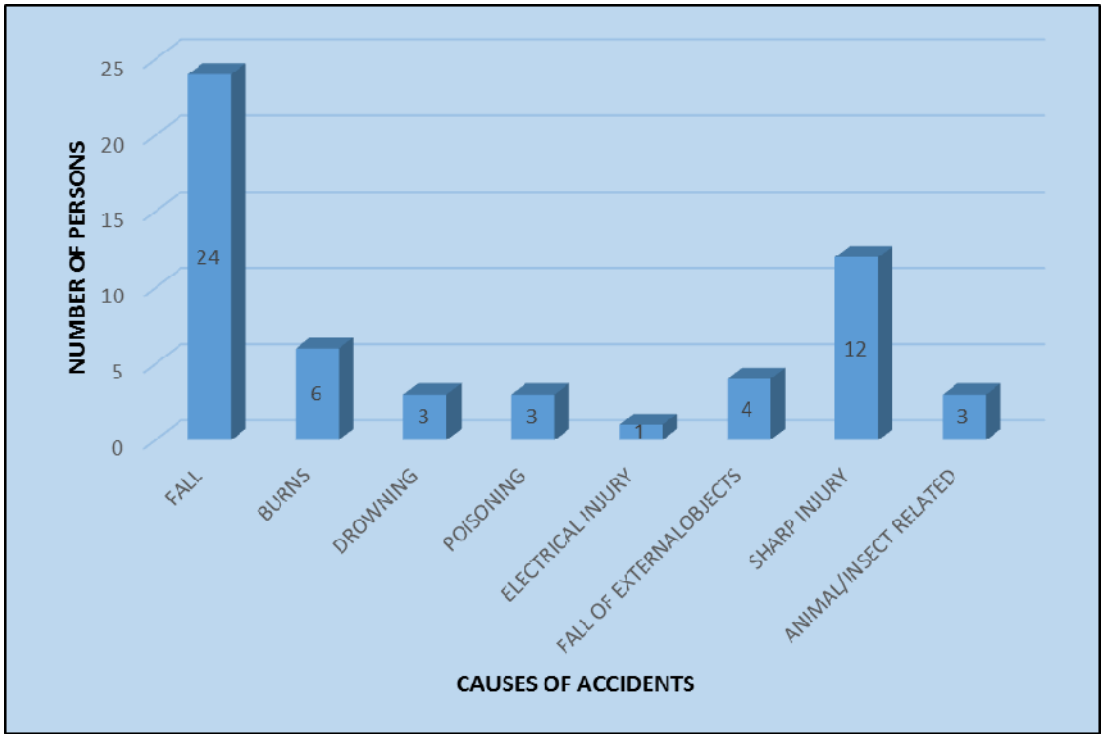
Domestic accident type	**Source of accident (N=56)**	**Frequency**	**Total**
Fall	At the level of floor	17	24
	From height	7	
Burns	Hot objects	1	
	Hot liquids	2	6
	Open flame	3	
Drowning	Large water container	2	3
	Sump	1	
Poisoning	Detergent powder	1	3
	Kerosene	1	
	Drugs	1	
	Insecticide	0	
Electrical injury	Electrical outlet	1	1
Fall of objects	Coconut	1	4
	Table	1	
	Metal object	1	
	Mixer grinder jar	1	
Injury by sharps	Sickle	3	12
	Knife	1	
	Blade	1	
	others	7	
Animal injury	Cow	2	3
	Snake bite	1	

N=56

This table showed that fall at the level of ground (17) was more in fall injury than fall from height (7). Injury by sharps was caused by blade, knife, sickle and others include needle, stone, playing object, broken furniture, axe (kodari).

6.4.3: causes of domestic accidents:

Fig. 11: Distribution of accidents according to causes of domestic accidents



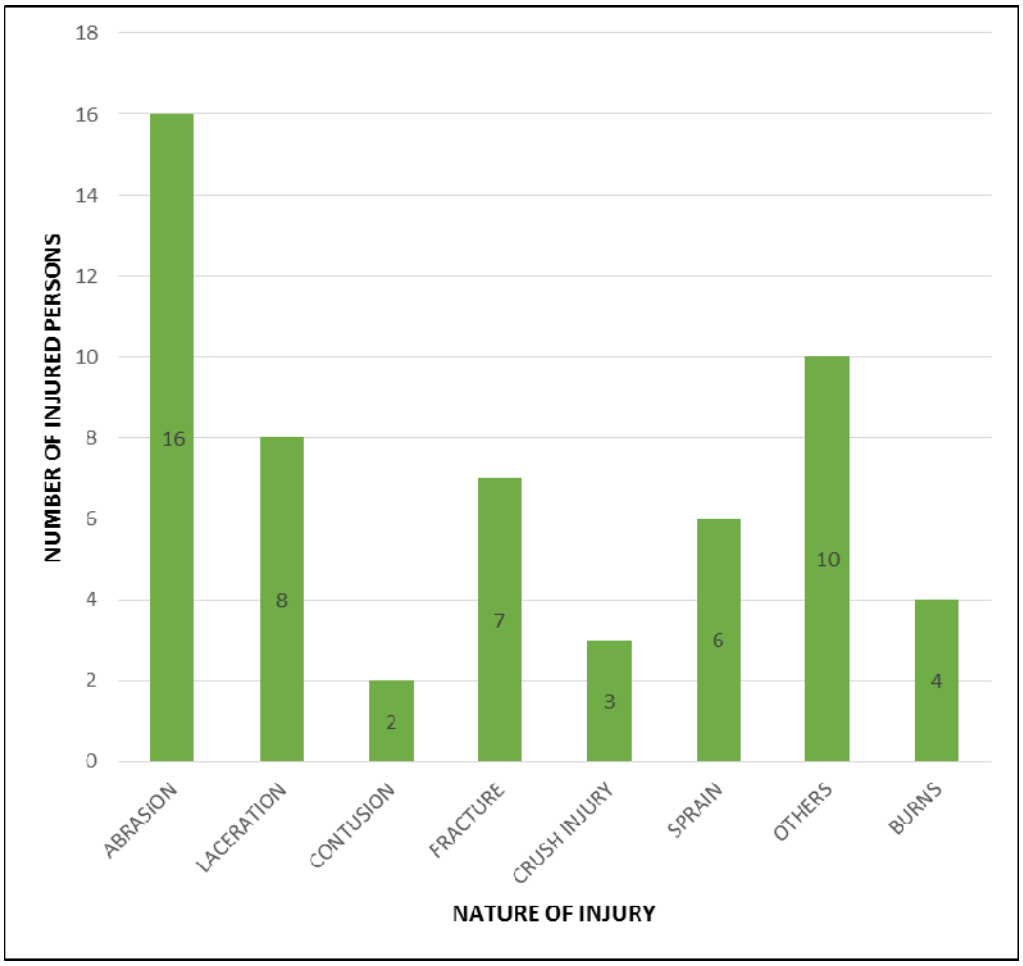
N=56

Fall was found to be the commonest mode of injury (42.9%), followed by injury by sharps 21.4%, burns 10.7%. fall of external objects accounts for nearly 7.1% of domestic accidents among the injured. Drowning, Poisoning and injury due to animate forces have occurred in 5.4% each. Electrical injury was present in 1.7%.

In this present study fall was found to be the most common cause of injury in all age groups. Poisoning and drowning was more common in children. Injury by sharps was common in extreme age groups.

6.4.4: Nature of injury:

Fig. 12: Distribution of accidents according to Nature of Injury



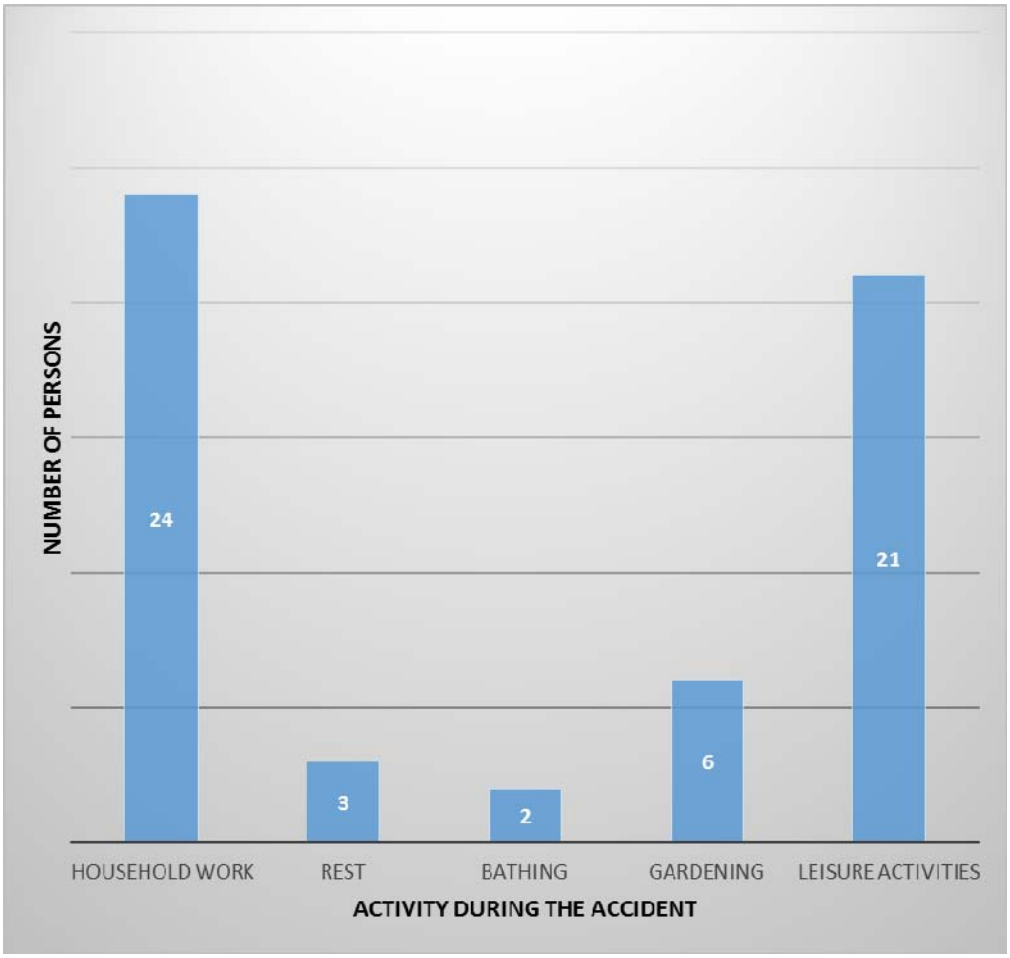
N=56

In children most of injuries due to domestic accidents were of mild category though some had severe injuries like fractures. The productive age group had more number of fractures and followed by disability which will result in loss of productivity.

Nearly 43% of injuries were mild injuries like abrasion and lacerations. Fracture had occurred in 7 individuals among the totally injured 56 individuals (12.5%).10.7% had sprain, 5.4% had crush injury, 3.6% had contusions. Nearly 17.9% of accidents had mixed type that is more than one type of injuries.

6.4.5: Activity during accident:

Fig. 13: Distribution of accidents according to activity during accidents



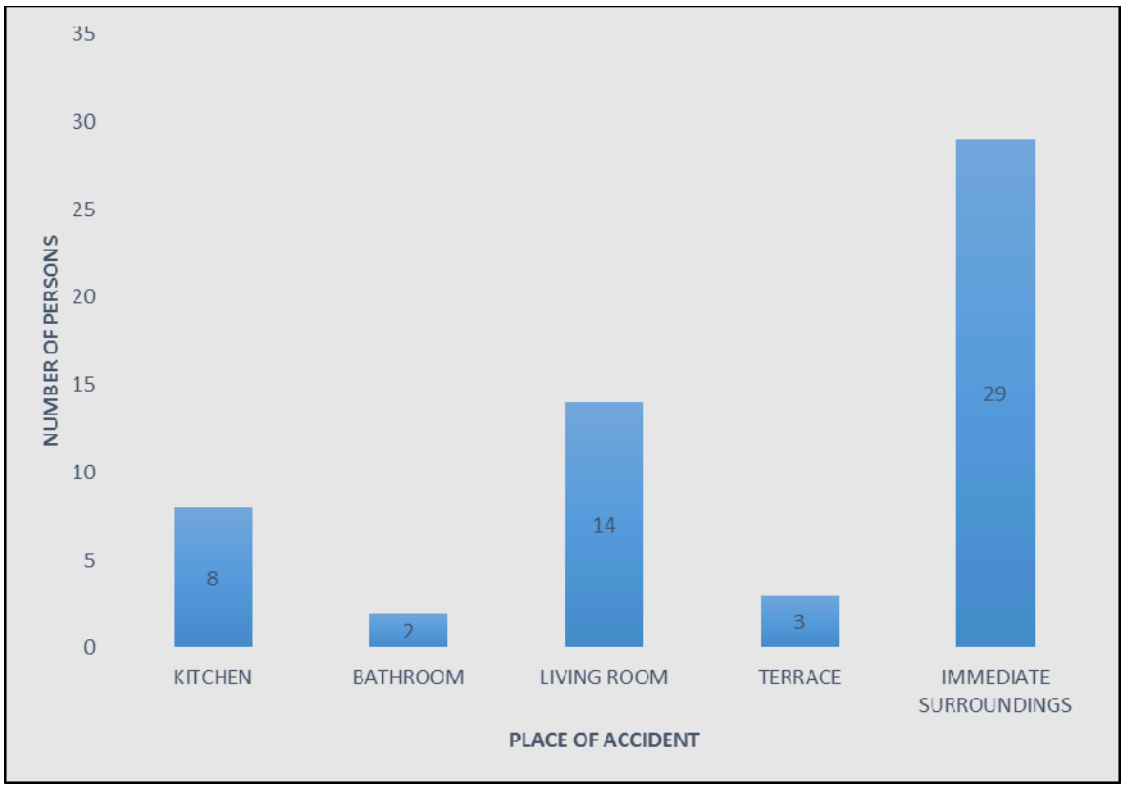
N=56

In this study, majority of the domestic accidents (42.9%) have occurred while doing house hold works like cooking, cleaning, washing, etc. followed by while doing leisure activities (37.5%) like watching television, chatting, playing indoor games, etc. 10.7% of accidents happened while gardening, and 5.4% during rest like sleeping, sitting. Only 2 cases of accidents occurred while bathing.

The above chart illustrates that mostly all people got injured during house hold works. But precautions can be taken to avoid injuries.

6.4.6: Place of Accidents:

Fig. 14: Distribution of accidents according to Place of Accidents



N=56

In the present study half the accidents have occurred in immediate surroundings (51.8%) of the houses like backside garden, in front of the house, steps, etc. this was because the habit of the rural people who mostly spent time outside the house (even eating and sleeping also) i.e. in its immediate surroundings. The other half of the domestic accidents have occurred in living room 25%, kitchen (14.2%), terrace (5.4%), and bathroom (3.6%). Most of the burns cases have occurred in kitchen.

6.4.7: Time of Accident:

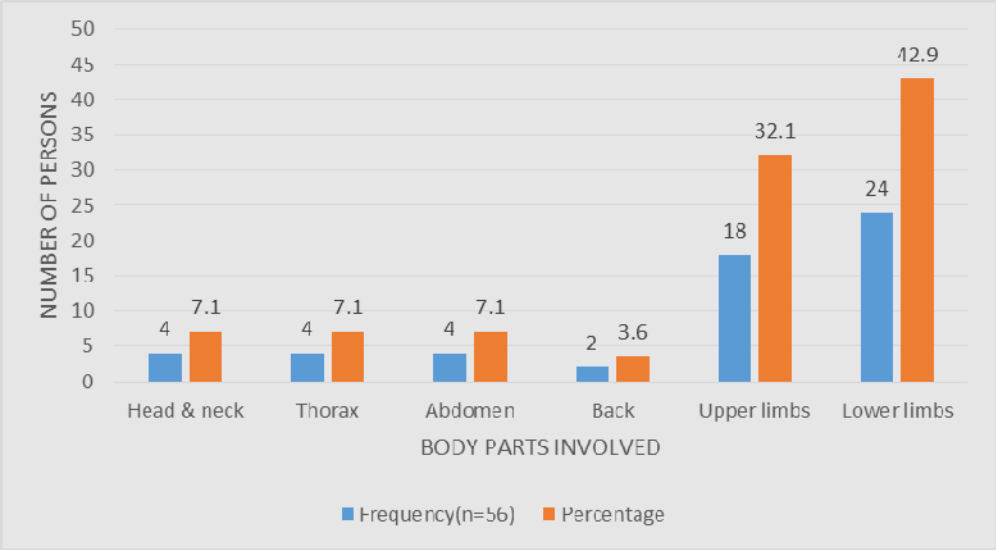
Table 22: Distribution of accidents according to Time at occurrence of Accident

Time of accident	Frequency (n=56)	Percentage
6pm - 12 midnight	19	33.9
12 midnight - 6 am	0	0
6am - 12 noon	11	19.6
12noon - 6 pm	26	46.5
Total	56	100.0

Most of the domestic accidents i.e. 26 cases have occurred during afternoon time that is 12 to 6 pm (46.5%), followed by at 6-12 am time and 19.6% of accidents have occurred in the night time that is from 6pm to 12 am. No accident cases have been reported from 12 am to 6am.

6.4.8: Body parts involved:

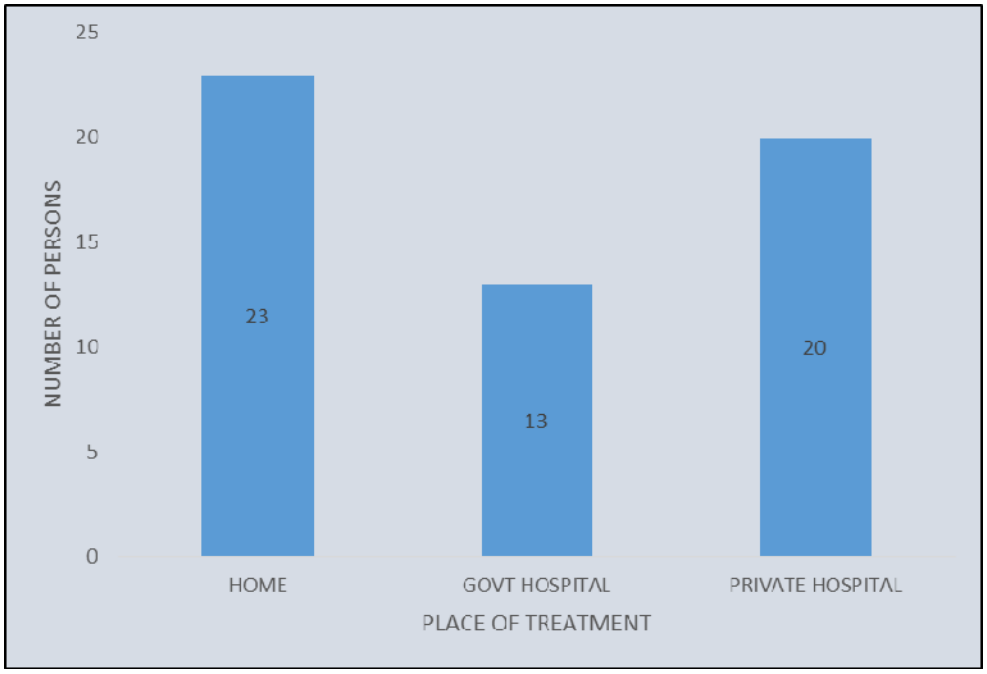
Fig 15: Distribution of accidents according to parts of the body affected



In the present study lower limbs 42.9% were found to the commonly affected site of the body in domestic accidents followed by upper limbs32.1%. Head and neck, thorax, abdomen each involved in 7.1% of the accidents. Only in 2 cases of accidents, back is involved.

6.4.9: place of treatment:

Fig. 16: Distribution of accidents according to place of treatment taken

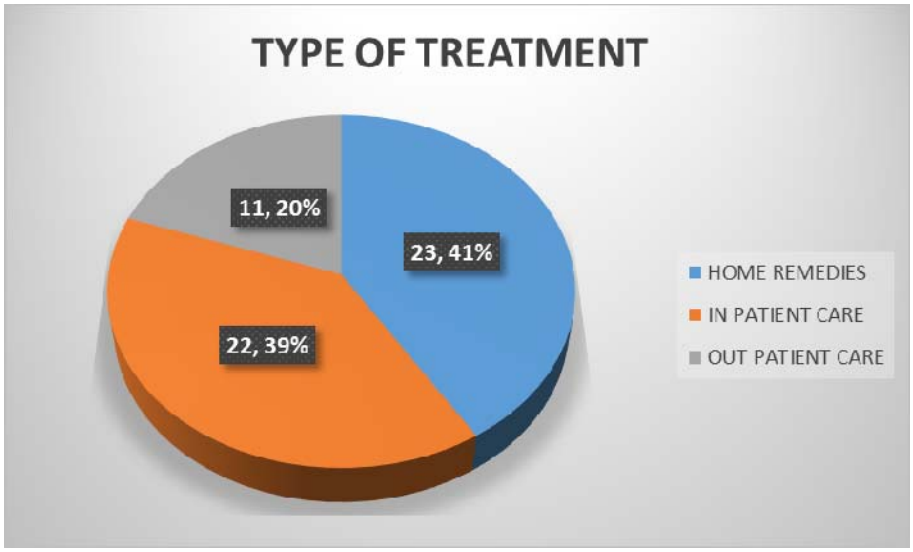


N=56

In the present study done in rural area, most of the domestic accident cases (41%) have taken treatment in home itself, by home remedies like applying oil, powder, soil, turmeric, etc.35.5% of the injured cases have taken treatment in private hospital. Only 23.5% of the injured took treatment in government hospital. The reason for not selecting government hospital for taking treatment was largely because of their perception of low quality, inadequate services in government hospital.

6.4.10: Type of treatment:

Fig 17: Distribution of accidents according to type of treatment taken



In the present study, among 56 injured individuals nearly 39.3% required hospitalisation and treated in-patient. 19.7% had only out patient service.

6.4.11: Duration of treatment:

Tab. 23: Distribution of accidents according to duration of treatment taken

Duration of treatment	Frequency (n=56)	Percentage
<1 day	14	25.0
1- 7 days	30	53.6
> 7 days	12	21.4
Total	56	100.0

The above table shows that most of the accident cases 53.6% required at least one week of treatment. 25% of the injured had taken only less than one day treatment. Only 21.4% of the injured individuals required more than one week treatment that might be due to the severity of the injury as already mentioned that 12.5% had fractures and nearly 5% had crush injury.

6.4.12: Duration of hospitalisation:

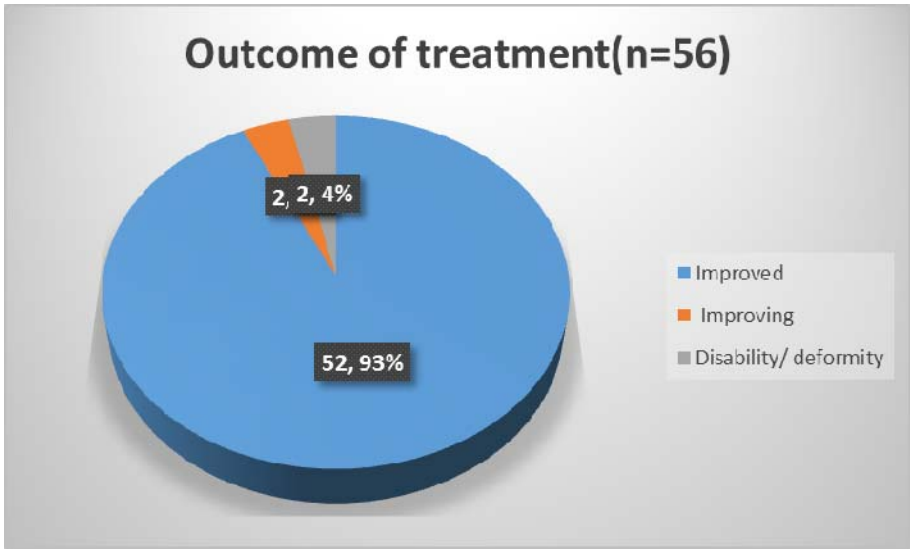
Table 24: Distribution of accidents according to duration of hospitalisation

Duration of hospitalisation	Frequency (n=56)	Percentage
Not hospitalised	34	60.7
<1 day	7	12.5
1- 7 days	10	17.9
> 7 days	5	8.9
Total	56	100.0

The above table describes that 10.7% of the injured persons stayed more than a week in hospital for treatment.

6.4.13: Outcome of treatment:

Fig. 18: Distribution of accidents according to outcome of treatment



Almost majority of the accident cases (92.9%) treated got improved. Only 3.6% have developed, deformity/disability and 3.6% of cases have or improving at the time of data collection.

6.4.14: Mode of transport used:

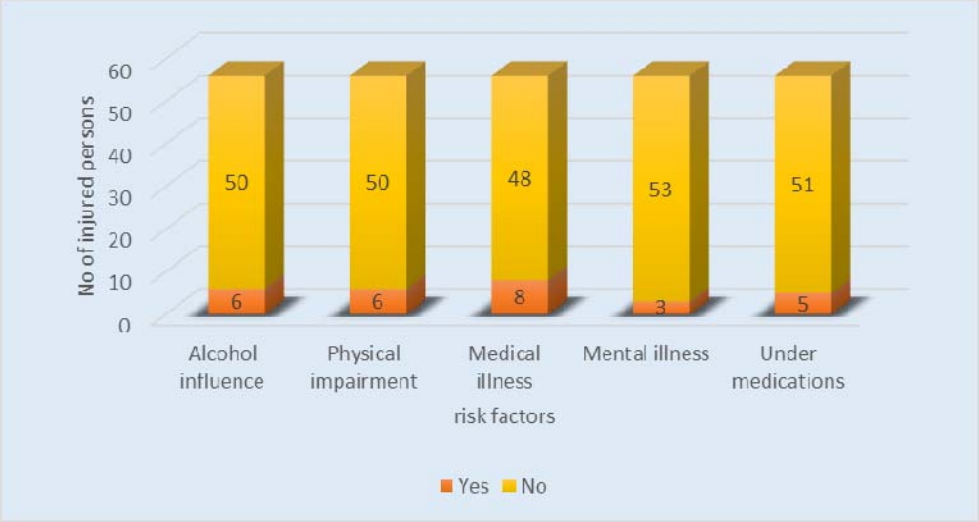
Table 25: Distribution of accidents according to mode of transport used

Mode of transport	Frequency (n=56)	Percentage
Not needed	23	41.1
Private vehicle	1	1.8
Own vehicle	15	26.8
Public transport	16	28.6
Ambulance	1	1.8
Total	56	100.0

In the present study of domestic accidents, most of the accidents had been treated in home itself by home remedies. Others who were treated in hospital setup have used public transport system (28.6%), or their own vehicles (26.8%) for transportation to hospitals. Only one case had used ambulance for transport and one case used private vehicle.

6.4.15: Human factors in domestic accident cases:

Fig 19: Human risk factors and domestic accidents

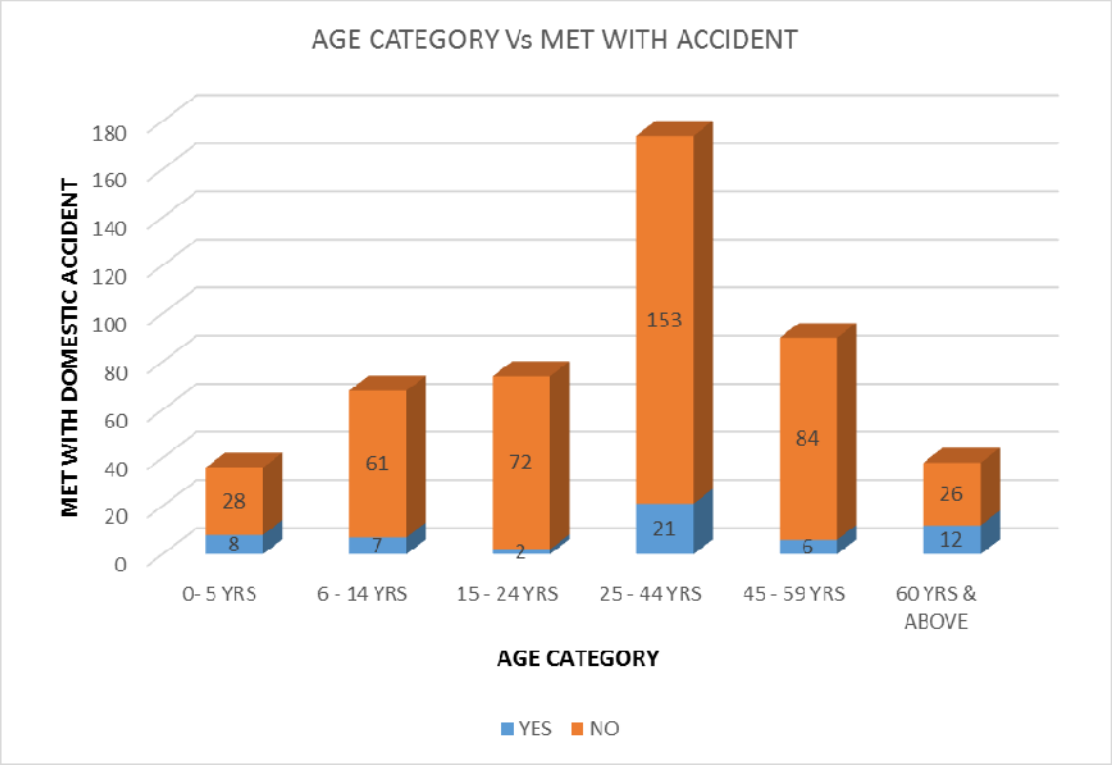


This figure shows that only few participants (got injured in domestic accidents) had the associated risk factors.

6.5. SOCIO- DEMOGRAPHIC DETAILS AND DOMESTIC ACCIDENT:

6.5.1: Age & Domestic Accidents:

Fig.20: Age wise distribution of domestic accidents



p=0.001(Fisher's exact test)

This cross sectional study on domestic accidents included more number of study participants from the age group of 25-44 years 174 individuals. But the domestic accidents occurred only in 12% of this group. But31.6% of the >60 years population(38 individuals) in this study had injuries in the last one year due to accidents in home environment, and 14.4% of the children 0-14 years age group(totally 104 individuals) were caught injured accidentally in home environment. So the extreme age groups were found to be mostly affected with domestic accidents than other age group. This was statistically significant. $p<0.05$.

6.5.2: Sex & Domestic accidents:

Table 26: Sex wise distribution of domestic accidents

Sex	Met with any accident in last 1 year (n=480)		Total
	Yes	No	
Male	33 (14.50%)	195 (85.50%)	228
Female	23 (9.10%)	229 (90.90%)	252
Total	56	424	480

The accidents were common in males (14.5% of males), than in females 9.1% which was statistically significant. $p<0.05$

6.5.3: Education:

Table 27: Distribution of domestic accidents according to educational status of the study population

Education	Met with any accident in last 1 year (n=480)		Total
	Yes	No	
ILLITERATE	16 (16.20%)	83 (83.80%)	99
I - V STD	16 (16.00%)	84 (84.00%)	100
VI - X STD	12 (7.80%)	141 (92.20%)	153
XI - XII STD	1 (2.90%)	34 (97.10%)	35
DIPLOMA	3 (10.70%)	25 (89.30%)	28
DEGREE	1 (3.10%)	31 (96.90%)	32
PG DEGREE	1 (11.10%)	8 (88.90%)	9
OTHERS	6 (25.00%)	18 (75.00%)	24
TOTAL	56	424	480

There is statistically significant rise in risk of domestic accident as level of education falls but there is slight increase in risk of accident in people who did post-graduation. P=0.036.

6.5.4: Occupation:

Table 28: Distribution of domestic accidents according to occupation of the study population

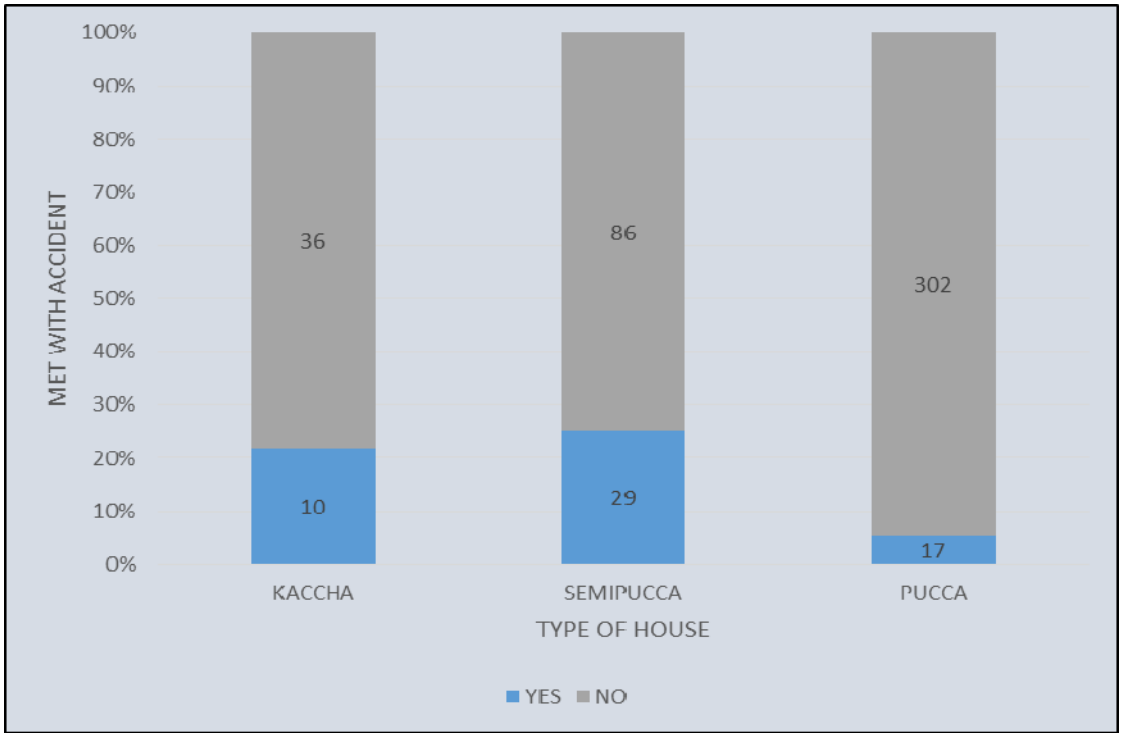
Occupation	Met with any accident in last 1 year (n=480)		Total
	Yes	No	
Not working	8 (21.10%)	30 (78.90%)	38
Unskilled	28 (12.30%)	199 (87.70%)	227
Semi-skilled	3 (23.10%)	10 (76.90%)	13
Skilled	0 (0.00%)	25 (100.00%)	25
Self employed	1 (11.10%)	8 (88.90%)	9
Student	6 (5.60%)	102 (94.40%)	108
Professional	0 (0.00%	6 (100.00%)	6
Retired	1 (16.70%)	5 (83.30%)	6
Housewife	0 (0.00%)	17 (100.00%)	17
Not applicable	9 (29.00%)	22 (71.00%)	31
Total	56	424	480

p=0.004 (Fisher's exact test).

Most of the injured were doing unskilled 12.3%, semiskilled work 23%. Retired individuals 16.7% also had a significant number of accidents as they are the individuals in >60 years of age group. This difference was statistically significant.

6.5.5: Type of House:

Fig 21: Distribution of domestic accidents according to Type of house



Chi square value=37.451 df=2 p=0.001

Most of the injured persons (n=29) in domestic accidents were living in Semi-pucca (25.2%) and kaccha houses n=10 (21.7%). Only 17 (5.3%) had injuries among those who lived in pucca house, which is described statistically significant. p=<0.05.

6.6: TYPES OF ACCIDENTS AND ASSOCIATED RISK FACTORS:

6.6.1: Age and Sex:

Table 29: Age and Sex wise distribution of various type of domestic accidents

Factors		Causes of domestic accidents (n=56)								Total
		Fall	Burns	Drowning	Poisoning	Electrical injury	Fall of external objects	Sharp injury	Animal/ Insect related	
AGE CATEGORY in years P=0.285(Fisher's exact test)	0- 5	3 37.5%	0	1 12.5%	2 25%	0	0	2 25.0%	0	8
	6 – 14	6 85.7%	0	1 14.3%	0	0	0	0	0	7
	15 – 24	0	1 50%	0	1 50%	0	0	0	0	2
	25 – 44	8 38.1%	3 14.3%	1 4.8%	0	1 4.8%	3 14.3%	4 19.0%	1 4.8%	21
	45 – 59	2 33.3%	0	0	0	0	1 16.7%	2 33.3%	1 16.7%	6
	60& ABOVE	5 41.7%	2 16%	0	0	0	0	4 33.3%	1 8.3%	12
SEX p=0.693 (Fisher's exact test)	Male	16 48.5%	2 6.1%	1 3.0%	2 6.1%	1 3.0%	3 9.1%	7 21.2%	1 3.0%	33
	Female	8 34.8%	4 17.4%	2 8.7%	1 4.3%	0	1 4.3%	5 21.7%	2 8.7%	23
TOTAL		24	6	3	3	1	4	12	3	56

From the above table it is clear that there is no significant difference in the causes of accidents in different age groups and sex. But more number of fall injury have occurred in 6-14 years age group (85.7%) followed by elderly >60 years age group (41.7%) and males had more fall injury than females.

6.6.2: Fall and risk factors:

Table 30: Association between fall accident and risk factors

Risk factor		Fall(n=56)		Total	P value
		Yes	No		
House type (n=56)	Kaccha	1 (10.00%)	9 (90.00%)	10	Fisher's Exact test P=0.045
	Semi pucca	13 (44.80%)	16 (55.20%)	29	
	Pucca	10 (58.80%)	7 (41.20%)	17	
Type of family (n=56)	Nuclear	16 (41%)	23 (59%)	39	Df=1 chi-square=1.76 P=0.359
	Joint family	8 (47.10%)	9 (52.90%)	17	
Slippery floor (n=56)	Yes	18 (78.30%)	5 (21.70%)	23	Df=1 Chi-square=19.97 P=0.001
	No	6 (18.20%)	27 (81.80%)	33	
Total		24 (42.90%)	32 (57.10%)	56	

More number of falls have occurred in pucca houses (58.8%), followed by semi-pucca 45%, and kaccha houses 10%. These associations are statistically significant. There is no significant relation between the family type and fall accident. 41% of the nuclear family and 47% of joint family have fall accident. Presence of slippery floor in the home is strongly associated with the risk of having fall injury in domestic environment. Nearly 78% of the fall accidents have occurred in the home when there is slippery floor.

6.6.3: Burns& risk factors:

Table 31: Burns and associated risk factors

Factors		Burns(n=56)		Total	P value
		Yes	No		
Type of house	Kaccha	3 (30.0%)	7(70.0%)	10	O.161 Fisher's exact test
	Semi pucca	2 (6.9%)	27 (93.1%)	29	
	Pucca	1 (6.3%)	15 (93.8%)	16	
Number of rooms	1	0	3 (100.0%)	3	0.543 Fisher's exact test
	2	5 (18.5%)	22 (81.5%)	27	
	3	1 (5.9%)	16 (94.1%)	17	
	>3	0	8 (100%)	8	
Type of fuel used for cooking	Electricity/ LPG/ biogas	2 (8.3%)	22 (91.7%)	24	0.686 Fisher's exact test
	Wood/ charcoal/ kerosene	4 (12.9%)	27 (87.1%)	31	
Separate kitchen	Yes	4 (11.4%)	31 (88.6%)	35	1 fisher's exact test
	No	2 (10%)	18 (90.0%)	20	
Open fire	Yes	6 (17.1%)	29 (82.9%)	35	0.05 Fisher's exact test
	No	0	20 (100.0%)	20	
Total		6 (10.9%)	49 (89.1%)	55	

The above table shows that there is no statistically significant association was found for the occurrence of burns and the suspected risk factors like type of house, number of rooms, type of fuel used for cooking, presence of separate kitchen.

But there is statistically significant association was found for burns incident and the presence of open fire. All the 6 cases of burns in this study occurred in the presence of open fire in the house of the affected individuals.

6.6.4: Poisoning and risk factors:

Table 32: Association between Poisoning and risk factors

Risk factors		Poisoning (n=56)		Total	P value
		Yes	No		
House type	Kaccha	2 (20.00%)	8 (80.00%)	10	Fisher's exact test 0.05
	Semi pucca	0 (0.00%)	29(100.00%)	29	
	Pucca	1 (5.90%)	16 (94.10%)	17	
Family type	Nuclear	3 (7.70%)	36 (92.30%)	39	Fisher's exact test 0.546
	Joint family	0 (0.00%)	17(100.00%)	17	
Kerosene storage in familiar containers	Yes	2 (8.00%)	23 (92.00%)	25	Fisher's exact test 0.581
	No	1 (3.20%)	30 (96.80%)	31	
Medications accessibility	Yes	2 (50%)	2 (50%)	4	Fisher's exact test 0.01
	No	1 (1.90%)	51 (98.10%)	52	
Total		3 (5.40%)	53 (94.60%)	56	

The above table describes two thirds of the poisoning cases have happened in kaccha houses than the pucca houses (1/3). This association was found to be statistically significant. No cases of poisoning have been reported in semi-pucca houses in this study.

All the poisoning cases have occurred only in nuclear families and not in the joint families. But the occurrence of poisoning has no statistically significant association with the type of family. This table describes that occurrence of poisoning is two times higher if

there is a risk of storing the kerosene in familiar containers but this association is not statistically significant. In this study a strong positive association was found between the presence of the risk of easy accessibility to medications and the occurrence poisoning accident.

6.6.5: Drowning and risk factors:

Table 33: Association between Drowning and Risk Factors

Risk factors		Drowning(n=56)		Total	P value
		Yes	No		
House type	Kaccha	0 (0.00%)	10 (100.00%)	10	Fisher's exact test 1
	Semi pucca	2 (6.90%)	27 (93.10%)	29	
	Pucca	1 (5.90%)	16 (94.10%)	17	
Water storage in large containers	Yes	3 (10.30%)	26 (89.70%)	29	Fisher's exact test 0.086
	No	0 (0.00%)	27 (100.00%)	27	
Total		3 (5.40%)	53 (94.60%)	56	

There is no relationship was established among the drowning cases based on their type of house. 2 cases have occurred in the people who were living in semi-pucca house. Whether it was a nuclear or joint family, the occurrence drowning doesn't show any statistical significant difference. The above table shows association between the presence of water storage in large containers and the risk of having drowning. Though all the three poisoning cases have happened while there is presence of large water storage container, this association is not statistically significant.

6.6.6: Injury by sharps and risk factors:

Table 34: Association between injury by sharps and risk factors

Risk factors N=56		Injury by sharps		Total	P value
		Yes	No		
Type of house	Kaccha	2 (20.00%)	8 (80.00%)	10	Fisher's exact test 0.137
	Semi pucca	9 (31.00%)	20 (69.00%)	29	
	Pucca	1 (5.90%)	16 (94.10%)	17	
Number of rooms	1	0 (0.00%)	3 (100.00%)	3	Fisher's exact test 0.840
	2	7 (25.90%)	20 (74.10%)	27	
	3	4 (23.50%)	13 (76.50%)	17	
	>3	1 (11.10%)	8 (88.90%)	9	
Family type	Nuclear	9 (23.10%)	30 (76.90%)	39	Fisher's exact test 0.738
	Joint family	3 (17.60%)	14 (82.40%)	17	
Sharps within reach	Yes	10 (66.70%)	5 (33.30%)	15	Fisher's exact test 0.001
	No	2 (4.90%)	39 (95.10%)	41	
Total		12 (21.40%)	44 (78.60%)	56	

The incidence of domestic accidents by sharp objects doesn't change based on the type of house. Though it doesn't show any statistically significant relation almost most of the injury 75%due to sharps have happened in the semi-pucca type of house.

The above table shows that the risk of injury by sharps is decreased when the number of rooms in the house is increased. But still there was no case injury due to sharp has occurred in home with single room this was due to that the single roomed houses might not have the risk of sharps within reach. The table shows that there is statistically significant association between the type of family and occurrence injury by sharp objects in home environment. Nuclear families had more number of injury by sharps than the joint family.

The above table reveals that the presence of sharps within reach and injury due to sharp objects in the home environment has statistically significant association. Most of the cases (more than 80% of cases) have occurred in the presence of sharps within reach.

6.6.7: Electric injury and risk factors:

Table 35: Association between electric injury and risk factors

Risk factors		Electric injury(n=56)		Total	P value
		Yes	No		
House type	Kaccha	0 (0.00%)	10 (100.00%)	10	Fisher's exact test
	Semi pucca	0 (0.00%)	29 (100.00%)	29	
	Pucca	1 (5.90%)	16 (94.10%)	17	0.482
Electrical outlets within reach	Yes	1 (33.30%)	2 (66.70%)	3	Fisher's exact test
	No	0 (0.00%)	53 (100.00%)	53	0.05
Total		1 (1.80%)	55 (98.20%)	56	

Only one Electrical injury have reported in this study which have occurred in pucca house type. This is not statistically significant. It was statistically significant that the electrical injury have occurred in the presence of electrical outlets within reach in the home environment.

6.6.8: Fall of external objects and risk factors:

Table 36: Association between fall of external objects and risk factors

Risk factors N=56		Fall of external objects		Total	P value
		Yes	No		
Type of house	Kaccha	0 (0.00%)	10 (100%)	10	Fisher's exact test 0.643
	Semi pucca	2 (6.90%)	27 (93.10%)	29	
	Pucca	2 (11.80%)	15 (88.20%)	17	
Number of rooms	1	0 (0.00%)	3 (100%)	3	Fisher's exact test 1
	2	2 (7.40%)	25 (92.6%)	27	
	3	1 (5.90%)	16 (94.1%)	17	
	>3	1 (11.10%)	8 (88.9%)	9	
Total		4	52	56	

Domestic accident due to fall of external objects showed no statistically significant difference with the type of house in this study but the accidents reported in this study have occurred in semi-pucca and pucca houses.

No statistically significant difference was found in the occurrence of domestic accident due to fall of external objects based on the number of rooms.

6.6.9: Animal injury and social status:

Table 37: Association between animal injury and social status

Social status	Animal injury		Total
	Yes	No	
CLASS I	0 (0%)	7 (100%)	7
CLASS II	0 (0%)	13 (100%)	13
CLASS III	0 (0%)	13 (100%)	13
CLASS IV	2 (10%)	18 (90%)	20
CLASS V	1 (33.3%)	2 (66.7%)	3
TOTAL	3	53	56

p=0.195 (Fisher's exact test)

There is no interlink between the occurrence of domestic accidents due to animate forces and the socio economic status of the people in this study.

Two third of the animal injuries in this study have occurred in people who were in kaccha house and one third in semipucca houses and injury due to animate forces was not reported in pucca houses in this study. But this association is not statistically significant.

6.7: FACTORS INFLUENCING TREATMENT:

6.7.1: Nature of injury and Type of treatment:

Table 38: Type of treatment taken based on nature of the injury

Nature of injury	Treatment type(n=56)			Total
	Out-patient care	In-patient care	Home	
Abrasion	4	0	12	16
Laceration	3	2	3	8
Contusion	0	0	2	2
Fracture	0	7	0	7
Crush injury	0	3	0	3
Sprain	2	3	1	6
Others	2	7	1	10
Burns	0	0	4	4
Total	11	22	23	56

p=0.001 Fisher's exact test

The above table described that the type of treatment taken was strongly based on the nature or severity of injury. This association was found to be statistically significant. All the fracture and crush injuries required in patient care than the abrasion injury.

6.7.2: Nature of Injury and Place of Treatment:

Table 39: Place of treatment taken based on Nature of the injury

Nature of injury(n=56)	Place of treatment			Total
	Home	Government hospital	Private hospital	
Abrasion	12 (75%)	0	4 (25%)	16
Laceration	3 (37.5%)	3 (37.5%)	2 (25%)	8
Contusion	2 (100%)	0	0	2
Fracture	0	4 (57.1%)	3 (42.9%)	7
Crush injury	0	1 (33.3%)	2 (66.7%)	3
Sprain	1 (16.7%)	1 (16.7%)	4 (66.6%)	6
Others	1 (10%)	4 (40%)	5 (50%)	10
Burns	4 (100%)	0	0	4
Total	23	13	20	56

P=0.001 Fisher's exact test

Selecting the place of treatment was also depended on the nature or severity of the injury in this study. Most of the minor form injuries like abrasion, laceration and contusion were treated in home itself. But the severe injuries like fractures and the crush injury were treated in private or government hospital. This was found to be statistically significant.

6.7.3: Nature of Injury and Duration of Treatment:

Table 40: Duration of treatment taken based on nature of the injury

Nature of injury	Duration of treatment taken (n=56)			Total
	<1 day	1- 7 days	> 7 days	
Abrasion	9 (56.2%)	7 (43.8%)	0	16
Laceration	1 (12.5%)	7 (87.5%)	0	8
Contusion	0	2 (100%)	0	2
Fracture	0	0	7 (100%)	7
Crush injury	0	2 (66.7%)	1 (33.3%)	3
Sprain	1 (16.7%)	2 (33.3%)	3 (50%)	6
Others	2 (20%)	7 (70%)	1 (10%)	10
Burns	1 (25%)	3 (75%)	0	4
Total	14 (25%)	30 (53.6%)	12 (21.4%)	56

p=0.001 Fisher's exact test

The above table showed that the minor form of injuries like abrasion and laceration didn't required more than one week treatment unlike the fractures which took more than a week treatment. Burns cases in this study required only maximum of one week treatment as the burns are of minor injuries in this study.

This association was found to be statistically significant.

6.7.4: Nature of Injury and Duration of Hospitalisation:

Table 41: Duration of hospitalisation based on nature of the injury

Nature of injury	Duration of hospitalisation (n=56)				Total
	Not hospitalised	<1 day	1- 7 days	> 7 days	
Abrasion	16 (100.0%)	0	0	0	16
Laceration	6 (75.0%)	1 (12.5%)	1 (12.5%)	0	8
Contusion	2 (100.0%)	0	0	0	2
Fracture	0	0	3 (42.9%)	4 (57.1%)	7
Crush injury	0	0	3 (100.0%)	0	3
Sprain	3 (50.0%)	2 (33.3%)	1 (16.7%)	0	6
Others	3 (30.0%)	4 (40.0%)	2 (20.0%)	1 (10.0%)	10
Burns	4 (100%)	0	0	0	4
Total	34 (60.7%)	7 (12.5%)	10 (17.9%)	5 (8.9%)	56

p=0.001 Fisher's exact test

Duration of hospitalisation was needed more for the severe form of injuries like fractures and crush injuries than abrasions.

This was statistically significant.

6.7.5: Outcome of treatment and nature of injuries:

Table 42: Outcome of treatment for different nature of injuries

Nature of injury	Outcome of treatment(n=56)			Total
	Improved	Improving	Disability/ deformity	
Abrasion	16(100%)	0	0	16
Laceration	7(87.5%)	1(12.5%)	0	8
Contusion	2(100%)	0	0	2
Fracture	7(100%)	0	0	7
Crush injury	2(66.7%)	0	1 (33.3%)	3
Sprain	4(66.6%)	1(16.7%)	1 (16.7%)	6
Others	10(100%)	0	0	10
Burns	4(100%)	0	0	4
Total	52(92.8%)	2(3.6%)	2(3.6%)	56

p=0.095, fisher exact test

The above table shows that all the abrasion injuries got cured completely. Disability occurred after crush injury and sprain was chronic pain and deformed finger. One lacerated injury and sprain injury was at improving status at the time of data collection. There was no statistically significant association between the outcome of treatment and nature of injuries.

6.8. Factor associated with domestic accidents by multivariate analysis:

Table 43: Logistic regression analysis of the factors associated with domestic accidents

variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. forExp(B)	
							Lower	Upper
Age category	-.025	.141	.032	1	.857	.975	.740	1.285
Education	.027	.101	.072	1	.789	1.027	.843	1.252
Occupation	-.063	.071	.794	1	.373	.939	.818	1.078
Type of house	1.045	.211	24.632	1	.000	2.843	1.882	4.296
Social status	.082	.151	.296	1	.586	1.086	.807	1.460

Binary logistic regression analysis showed that the occurrence of domestic accidents in various types of houses was found to be statistically significant even after adjusting for other potential risk factors like socio economic status, education, occupation and age category of the participants. The adjusted odds ratio for developing a domestic accident among participants in kaccha and semi-pucca was 2.843 with 95% C.I. 1.882 – 4.296.

Discussion

7. DISCUSSION

This study is a descriptive cross sectional study done to estimate the prevalence of domestic accidents in rural communities in Sankarankovil HUD, Tirunelveli and to find out the various risk factors for domestic accidents and treatment seeking behaviour of the community for domestic accidents.

This study is of reasonable value because there was lack of or no information about the magnitude of accidents occurring in the home environment compared to road traffic accidents. Domestic accidents account for burden of unintentional injuries next to road traffic injuries. Though the domestic accidents were underreported worldwide and also in India, the domestic accidents are a major public health problem. Most of the domestic accidents can be prevented by changing the risky home environment.

Prevalence of domestic accidents:

- The prevalence of domestic accidents in this study was 11.7 % (56), where the domestic accident was considered as accidents occurring in home and its immediate surroundings. So among the 480 individuals studied, 56 had at least one injury in last one year from the date of study.

- The overall prevalence of domestic accidents in population based study on domestic accidents done in various parts of the world varied from 1% to 30%. The prevalence of this present study lies within this range. The variation in prevalence may be due to difference in selection of study population, difference in methodology and the difference in selection of demographic area.

- In this study 56 had domestic accidents i.e. 11.7% which was similar to the finding of the community based study done in a rural area of Punjab by R Aggarwal et al in 2008, in which the prevalence was 10.6%, where semi structured questionnaire was used for data collection.[40]

- In a study done in rural area of Bangladesh by Dr Md Shajedur Rahman Shawon in 2011, the prevalence of domestic accidents was 14.6%. In this study questionnaire survey was done. The questionnaire had socio demographic details and domestic accident details. The study finding was similar to that of this present study.[54]

- Another study done in Imphal by Hmingthanzuala et al in 2011 reported the prevalence of 6.85%. This finding was less than that of the present study.[44]

- Lamawansa et al reported a prevalence of 8.26% in his study done in a rural community in Sri Lanka, in 2005, which was similar to the prevalence of present study.[41]

- A population based cross sectional study done in a rural area of Bangalore, Karnataka by N.R.Ramesh Masthi et al in 2009 had the similar prevalence of domestic accidents 9.6% as in the present study.[43]

- A community based cross study done in Gujrat by Dinesh J Bhanderi et al in 2005 reported the prevalence of 1.7%, which was very less when compared to present study.[42]

- A study of domestic accidents in an air force community in India found that average incidence of domestic accidents was 110.56 per 1000 per year (11.056%) which is

similar to the study. Another study carried out in Delhi also had similar prevalence of domestic accidents i.e. 110 per thousand (11%) per year. [68,69]

The variation in prevalence of these studies and the present study may be due to various reasons like:

1. The duration of study varies in different studies.
2. Difference in Urban/ Rural settings also influences the prevalence.
3. Age groups included in the studies varies from other studies.
4. Distribution of risk factors among the study population might be different.

Home environmental details:

In this present study, 11.5% had slippery floor, 13.1% had the risk of sharp objects or things within reach, 55.2% had open fire, 37.7% had stored the kerosene in familiar containers like water bottle, vessels, tumbler, etc.

Only 2.5% had medicines with access to children. 2.1% of the houses had open electrical outlets without guard and easily accessible to children and others. Nearly 42.7% of the houses had large water storage containers like large vessel. Presence of open fire was the prevalent risk factor in this study followed by the large water storage containers.

Most of the old studies had not reported the risky environmental factors for domestic accidents. They concentrated mostly on type, nature, place of occurrence of accidents. A study done in Surat in 2005 by V.Choudry et al reported that the presence of open fire was the commonest risk factor in that study population which was similar to this present study.

Age and Sex wise distribution of domestic accidents:

In this present study more number of i.e. 21 cases out of 56 domestic accidents have occurred in the age group of 25-45 years, the breadwinners of their family and as this age group people were actively involved in works in and around the home. This may due to the fact that this age group people constituted the maximum study population. But only 12% of this age group had accident.

Most of the elderly had (31.6%) domestic accidents. 0-5 years and 6-14 years age group had 22%, 10.3% domestic accidents respectively. The large number of accidents in the under-five year age group can be explained on the basis of their exploratory habit. Children are at high risk because of their natural curiosity, their mode of reaction, their impulsiveness and their lack of experience in the calculation of risk.[26]

These findings are similar to the findings of R Aggarwal et al, where the maximum number of domestic accidents occurred in the 15-45 year age-group (34.3%), 0-5 & 6-15 year age-group suffered from 25.7 & 25.3% accidents respectively.[40]

In this present study 14.5%, 33 of the males and 23 of female that is 9% of them had domestic accidents. Though females are more engaged in household works surprisingly in our study we found males are the most frequent victim of domestic accidents. This finding is similar to a study finding where the males (52.6%) suffered more domestic accidents than females (47.4%) though statistically not significant by Hmingthanzuala et al. But in most of the studies done in India females were the commonly affected group than the male.[31, 40, 42, 70]

Accidents in home based on the causes of injury:

Most of the previous studies have also reported as fall was the commonest mode of injury in domestic accidents which is similar to present study. [45, 68,71,72,73]

In this present study, falls 42.9% found to be commonest type of accident followed by injury by sharps 21.4% and burns 10.7%. R Aggarwal et al in his study also reported the similar findings. Falls (44.3%) were the most common injury occurred in home environment followed by inanimate forces like fall of objects, injury by sharps (34.6%),burns(13%).Chaurasia et al also observed a higher proportion of falls, burns, and scalds in their study.[26, 40, 70.]

Study done by Ramesh et al and Shajedur et al were also had the similar findings that falls were the common mode of injury followed by injury by sharps like this study.[43,54]

The LARES survey of the WHO Regional Office for Europe reported cuts as the most frequent accident type, followed by falls and burns, while burns and sharp-object injuries were the most common types of domestic accidents in the study by Neghab et al.[74, 75]

Home accidents based on the nature of injury:

In this present study nearly 28.6% of the injured had abrasions which cleared the statement that most of the domestic accidents were mild injuries as stated in previous studies. Laceration 14.3%, contusion 3.6%, fracture constituted 12.5%.

These findings were in same track as in a study done in Bengaluru where abrasions occurred in 49% of the injured. But the incidence of fractures was more in the present study.[43]

In the present study 43% had only minor form of injuries like abrasion and laceration. In the study by R Aggarwal, 16.3% serious & 11.0% very serious accidents were reported. Only one fatal case occurred which was in a 65 year old female.[40]

Home accidents based on place of accident:

In the present study, commonest place of occurrence was immediate surroundings (cowshed, yard, stairs) of the houses 51.8% this may be due to the habit of people in rural area, who mostly spent their time in immediate surroundings of the house and 14.2% of accidents have occurred in kitchen, 3.6% in bathroom which are similar to the findings of a study done in Bangladesh.[54]

These findings of this study is also same as in a study by R Aggarwal, where maximum number of accidents (53.3%) occurred in the courtyard and 16.3% of accidents occurred in the kitchen whereas only 2.3% accident occurred in the bathroom. Domestic accidents in other places in the house (i.e. stairs, roof, cow shed) were only 7.3%.[40]

Domestic accidents and activity during accident:

Most of the (42.9%) domestic accidents in this study have occurred while doing household works followed by leisure activities (37.5%) like playing. The same inference was made in a study done in Bangladesh where most of the accidents occurred while doing domestic work and playing.[54]

Domestic accidents and parts of the body involved and time of accident:

This study says that majority (46.5%) of the accidents had occurred between 12- 6 pm, and lower limbs 42.9% were the mostly involved parts of the body in domestic accidents. In most of the previous studies domestic accidents have occurred in the afternoon and morning hours which is similar to this study.[40, 43.]

While most frequent site of injures in domestic accidents was upper limbs 70% (366), followed by lower limbs 34% (178), head and neck 12% (63), back 4% (21), and injuries in thorax and abdomen 2% (11) as found in a study by Ramesh et al.[43]

Domestic accidents and treatment details:

Nearly 41% of the injured had taken treatment in home itself, 35.5% took treatment in private hospitals and only 23% went to government hospitals in this present study.12.5% of injured individuals required hospitalisation for at least one day. Most of the injured had recovered completely 92.9%. Only 3.6% had developed disability or deformities in this study.

This is consistent with the results of a study by Bhanderi et al. where full recovery was observed in 83% cases of domestic accidents and the results of Ramesh et al, where majority 92% (480) of domestic accident victims had recovered completely, 6% (32) of victims were in the recovery phase at the end of the study period, and 2% (10) of victims recovered with disability. No deaths were reported due to domestic accidents.

However, Neghab et al, reported that permanent disability rate was 0.05% and mortality rate due to domestic accidents was 1% in their study, which was high.[42, 43, 75]

Summary and Conclusion

8. SUMMARY & CONCLUSION

A descriptive cross sectional study was done to find out the prevalence of domestic accidents and its associated risk factors for domestic accidents among 480 randomly selected individuals who were residing in selected villages in Sankarankovil, Tirunelveli.

A semi structured questionnaire was used to collect information about socio demographic details, home environment details and domestic accident details. Data was collected by using personal interview of the selected individuals, and in case of children, details were collected from their mother, or from their caregivers. The domestic accidents are accidents that are occurring in and around the home and in its immediate surroundings.

- In this descriptive study totally 480 individuals participated. Among them 47.5% were male, and 52.5% were females. Age of the study population ranged from 2 months to 85 years of age. The average age of this study population was 32.5 years. Majority of the study population belonged to 25-44 years of age which is the productive group and most of them were Hindus i.e. 98%, 6 were Christians, 3 were Muslims.

- Most of study participants were doing unskilled work (47.3%). 60.2% were married, 20.6% in the study population were illiterate.

- The socio economic status of the study population was classified by using modified B.G.Prasad socio economic status scale 2014. Based on this, majority of the individuals belonged to class IV 36.3% followed by class III 26.7%, class II 18.8%, and class I 16%. Only 2.5% of study population belonged to very low income group i.e. class V.

- 66.5% of the people were living in pucca houses and only 9.6% were in kaccha houses and average number of rooms in a house was 2. Nearly three fourth (74%) of the study population were from nuclear family.

- Presence of open fire in the house was more prevalent in the study population almost 55% (265) of them had open fire. Next to open fire water storage in large containers was prevalent in 42.7% of the participants followed by kerosene storage in familiar containers (37.7%) present in 181 participants, presence of double exit in 164 (34.2%), sharps present within reach in 63 (13.1%). Slippery floor was present in 55 participants. Electrical outlets within reach (2.1%) was least prevalent factor in this study population.

This study revealed that the prevalence of domestic accidents is 11.7%. (95% confidence interval 8.82% - 14.58%).

- Most commonly involved age groups were the children 0-14 years (14.4%) and elderly >60 years age group (31.6%). Males had more number of domestic accidents than females. Socio economic status, type of family didn't have significant association with occurrence of domestic accidents in this study. More number of accidents have occurred in semi-pucca type of house followed by kaccha house than in pucca houses.

- Slippery floor was significantly high in semi-pucca (25.2%) and kaccha houses (21.7%).

- Open fire was significantly high in low income groups i.e. in socio economic class IV and V group people, low educational status, Unskilled workers and unemployed, kaccha and semi-pucca and houses with one or two rooms.

- Risk of Sharps within reach was found to be significantly high in low income group i.e. Class IV and V socio economic class, 0-5yrs and 25-44 years age groups, and in people with only school education and in unskilled workers, Nuclear families and in semi-pucca and kaccha houses with less number of rooms.

- Kerosene storage in familiar containers like water bottles, vessels, utensils, tumblers, etc. was found significantly high in low income groups class IV and V and also in nuclear families.

- Presence of slippery floor, presence of open fire, presence of sharp objects within reach were found to be strongly associated with fall, burns, injury by sharps respectively.

- Among various types of injuries fall was found to be the commonest cause of domestic accidents. Fall was found to be the commonest mode of injury (42.9%), followed by injury by sharps 21.4%, burns 10.7%,fall of external objects 7.1%. drowning , poisoning, injury due to animals have occurred in 5.4% each. Poisoning and drowning was more common in children. Injury by sharps was common in extreme age groups.

- In this study, most of the injuries due to domestic accidents were of mild category. . Nearly 43% of injuries were mild injuries like abrasions and lacerations. Fracture occurred in 12.5% of study population. Lower limbs (42.9%) were found to be

commonly affected site of the body in domestic accidents followed by upper limbs (32.1%) followed by head and neck, thorax, abdomen (7.1% each).

- Mostly all people got injured during house hold works (42.9%) followed by leisure activities (37.5%). Almost half of the accidents have occurred in immediate surroundings (51.8%) of the houses and 25% of the domestic accidents have occurred in living room.

- Majority of the accidents happened in the afternoon 12 noon to 6pm (46.5%) and in the evening time i.e. 6 pm to 12 mid night 33.9%. so most of the accidents were reported in the evening time.

- Most of the domestic accident cases (41%) have taken treatment in home itself. 39% of the injured got inpatient treatment and 20% had only outpatient treatment. Almost majority of the accident cases (92.9%) treated got improved. Only 3.6% have developed, deformity/disability and 3.6% of cases were improving.

So this study has revealed that there is increased risk of domestic accidents in the study area mainly involving the extreme age groups i.e. 0-14 years age group and > 60 years age group. The risky home environment were significantly high in low income group and in who are residing in kaccha houses. So if the risky environment are modified we can reduce the burden of injuries, because the accidents are 100% preventable. So the study findings concluded that there is a need to modify the risky home environment to minimise the risk and to give proper supervision and care to the dependant age groups.

Limitations

9. LIMITATIONS

1. There is a possibility of recall bias in this study, because accidents in last one year was studied. People may not have remembered all the injuries mainly the mild injuries. The people revealed only some type of injuries thinking that others might not be important.

2. This study was done only in rural settings. To have adequate information about domestic accidents studies to be done in other settings like urban, urban slums.

3. This study focused only on the environmental factors. Other factors like human behaviour, culture also must be studied to know the causation.

4. This is the cross sectional study. Comparative, other interventional studies can be done to make more accurate findings.

Recommendations

10. RECOMMENDATIONS

1. Education to the parents is needed to change the risky home environment and to reduce the occurrence of accidents in home.

2. There is a need for developing national policies and programmes for preventing the domestic accidents.

3. IEC activities are needed to create awareness about domestic accidents and prevention of domestic accidents.

4. There is a need for more researches with large study population in various settings is required to know about the various risk factors both in environment and host, to know in detail about domestic accidents. So that the prevention will be possible.

5. Slippery floors can be prevented by proper cleaning and using a non-slippery material in constructing floor. Burns should be avoided by using proper size burner which don't let open fires and also by using the stove above the ground level.

6. Falls can be prevented by avoiding the slippery floor and proper supervision and care to the children and elderly as they are more prone to fall.

7. Drugs, chemicals should be stored properly and away from children. Kerosene can be stored in proper containers to avoid accidental poisoning.

8. Water storage should be done with appropriate containers or tanks and should be covered with lid always.

9. To avoid injury due to animals, domestic animals like cow, dog, etc. should be kept in separate shelter and not within house or just in front and behind the house.

10. Human attitude towards the accidents at home and treatment for the accidents should be changed.

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Annexures

12. ANNEXURE-1

INFORMATION SHEET

Title of the Dissertation:

A cross sectional study on prevalence of domestic accidents in selected villages of Sankarankovil in Tirunelveli district-2014.

According to WHO injuries are becoming major public health burden. Injuries are classified into intentional and unintentional injuries. Home may be a place for both intentional and unintentional injuries. This study is trying to find out the burden of accidents in the home environment.

Identification and modification of risky home environment will help in preventing accidents in home which is supposed to be a safe shelter for human being.

This study is an attempt to identify the magnitude of domestic accidents and associated risk factors and treatment seeking behaviour among people residing in villages of Sankarankovil.

We request you to participate in this study.

The privacy of the participants in the research will be maintained throughout the study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared.

Taking part in this study is voluntary. You are free to decide whether to participate in this study or to withdraw at any time. Your decision will not result in any loss of benefits to which you are otherwise entitled.

The results of the special study may be intimated to you at the end of the study period or during the study if anything is found abnormal which may aid in the management or treatment or prevention.

INFORMED CONSENT FORM

Title of the Dissertation:

A cross sectional study on prevalence of domestic accidents in selected villages in Sankarankovil taluk in Tirunelveli district, Tamil Nadu-2014

Name of the participant: Age/Sex:

Name of the participant's parents: Age/Sex:

(1) I have been explained in detail about the study and its procedure. I confirm that I had completely understood the study and have had the opportunity to ask questions

(2) I understand that my/ my son/daughter's participation in the study is voluntary and that I am/my son/daughter is free to withdraw at any time, without giving any reason, without their medical care or legal rights being affected.

(3) I understand that the principal investigator, others working on the investigator's behalf, the Ethics Committee and the regulatory authorities will not need my permission to look at my health records both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the trial. I agree to this access. However I understand that my or my son/daughter's identity will not be revealed in any information released to third parties or published.

(4) I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose(s).

(5) I agree to /to my son/daughter participating in the above study.

Signature of investigator

Signature or Thumb impression
of the participant/ participant's parent or
Guardian

_____ _____

Date:

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ANNEXURE-2

QUESTIONNAIRE-ENGLISH

A CROSS SECTIONAL STUDY ON DOMESTIC ACCIDENTS IN SANKARANKOVIL TALUK IN TIRUNELVELI DISTRICT-2014

SERIAL NO: _____ DATE: _____

I. SOCIO DEMOGRAPHIC DETAILS:

1. Name :

2. Age : ☐ 1) 0-14 ☐ 2) 15-24 ☐ 3) 25-45 ☐ 4) 46-60 ☐ 5)>60 (years)

3. Sex : ☐1) Male ☐2) Female

4. Education : ☐ 1) Illiterate ☐ 2) I-V ☐ 3) VI-X ☐ 4) XI-XII
☐ 5) Diploma ☐ 6) Degree ☐ 7) PG Degree ☐ 8) NA

5. Occupation : ☐ 1) Not working ☐ 2) Unskilled ☐ 3) Semi skilled
☐ 4) Skilled ☐ 5) Self-employed ☐ 6) Student
☐ 7) Semi-professional ☐ 8) Professional ☐ 9) Retired
☐ 10)Housewife ☐ 11) NA

6. Income / Month (Rs) : _____

7. Marital Status : ☐ 1) Yes ☐ 1) No

8. Type of family: ☐ 1) Nuclear ☐ 2) Joint family ☐ 3) Others

9. Religion : ☐ 1) Hindu ☐ 2) Muslim ☐ 3) Christian
☐ 4) Others (specify)

10. Type of House: ☐ 1) Kaccha ☐ 2) Semi-pucca ☐ 3) Pucca ☐ 4) Others

11. Number of rooms: ☐ 1) 1 ☐ 2) 2 ☐ 3) 3 ☐ 4) 4 or more

12. Type of fuel used for cooking : ☐ 1) Electricity/LPG/Biogas
☐2) Wood/Charcoal/Kerosene

13. Do you have separate room for cooking? ☐ 1) Yes ☐2) No

14. Source of lighting : ☐ 1) Electricity ☐2) kerosene ☐3)oil

15. Family composition:

SI.No	Name	Age	Sex	Marital status	Education	Occupation	Income/Month

II. DETAILS OF HOME ENVORINMENT

16. Slippery floor ☐ 1)Yes ☐2) No
17. Presence of sharps within reach ☐ 1)Yes ☐2) No
18. Open fire ☐ 1)Yes ☐2) No
19. Storage of Kerosene in familiar containers ☐ 1)Yes ☐2) No
20. Accessibility of medication ☐ 1)Yes ☐2) No
21. Presence of electrical outlets within reach ☐ 1)Yes ☐2) No
22. Storage of water in large container without shield and within reach ☐ 1)Yes ☐2) No
23. Presence of drainage near house ☐ 1)Yes ☐2) No
24. Presence of double exit ☐ 1)Yes ☐2) No

III. DOMESTIC ACCIDENT DETAILS:

25. Have you or your family members met with an accident in the home due to any cause in last one year? ☐ 1)Yes ☐ 2) No

26. Have you or your family members been hospitalised for an accident in the home due to any cause in last one year? ☐ 1)Yes ☐ 2) No

27. Has any of your family members died due to domestic accidents in the last one year? ☐ 1) Yes ☐2) No

28. Causes of domestic accidents:
    ☐1) Falls ☐2) Burns ☐3) Drowning
    ☐4) Poisoning ☐5) Electrical injury ☐6) Fall of external objects
    ☐7) Injury from sharp or pointed instruments ☐8) Animal/ insect related injuries
    ☐9) Others

29. Nature of Injury:
    ☐1) Abrasion ☐2) Laceration ☐3) Contusion ☐4) Fracture
    ☐5) Crush Injury ☐6) Sprain ☐7) Others(specify) _____
    ☐8) If burns_____%

30. Activity during the accident:
    ☐1) Household works ☐2) Rest ☐3) Bathing ☐4) Gardening
    ☐5) Leisure Activities ☐6) Eating And Drinking ☐7) Others(specify) _____

31. Risk Factors:

Sl. No	Risk factors	Yes	No
1	Under the influence of alcohol	☐1	☐2
2	Presence of Physical Impairments	☐1	☐2
3	Medical Illness	☐1	☐2
4	Mental illness	☐1	☐2
5	Under medications	☐1	☐2

32. Source of accident**:**

32a) poisoning : ☐1) Insecticide ☐2) Kerosene ☐3) Drugs
☐4) Dish washer/detergents ☐5) other products_____

32b) falls: ☐1) at the level of floor ☐2) fall from height

32c) burns : ☐1) Open Flame ☐2) Hot Liquids ☐3) Hot Objects
☐4) Steam ☐5) Others (specify) _____

32d) Injury by sharps : ☐1) Knife ☐2) Blade ☐3) Sickle
☐4) others (specify) _____

32e) drowning : ☐1) Big water storage container ☐2) Well ☐3) Pond
☐4) Others ☐5) Sump ☐6) Overhead tank

32f) Animal injury: ☐1) dog bite ☐2) snake bite ☐3) cow/buffalo
☐4) others_____

32g) Fall of objects: _____

33. Place of accident : ☐ 1) Kitchen ☐2) Bathroom ☐3) Living room
☐4) Terrace ☐5) Immediate surroundings
☐6) Others (specify) _____

34. Time of the accident: ☐ 1) 6am-12noon ☐2)12 noon -6pm
☐3) 6 pm – 12midnight ☐4)12 midnight – 6 am

35. Parts of the body involved: ☐1)Head & Neck ☐2)Thorax ☐3)Abdomen
☐4) Back ☐5) Upper Limbs ☐6) Lower Limbs
☐7) Genitals ☐8) Spine and vertebral column

IV. TREATMENT HISTORY:

36. Place of treatment : ☐ 1) Home ☐2) Government hospital
☐3) Private hospital ☐4) Traditional medicine

37. Type of Treatment taken: ☐1) Outpatient care ☐2) Inpatient care ☐3) Home remedies
☐4) Traditional medicine ☐5) Others (specify) __

38. Duration of treatment taken: ☐ 1)<1day ☐2)1-7days ☐3)>7days

39. Duration of hospitalisation: ☐ 0) Not hospitalised ☐ 1)<1day ☐2)1-7days ☐3)>7days

40. Outcome of treatment : ☐ 1) Improved ☐2) Not Improving
☐3) Disability/Deformity ☐ 4) Dead

41. Mode of transport used :
☐ 1) Private vehicle-auto, call taxi ☐2) Own vehicle ☐3) Public transport
☐ 4) Ambulance

QUESTIONNAIRE-TAMIL

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ANNEXURE 3

SOCIO ECONOMIC CLASS BASED ON MODIFIED B.G.PRASAD'S CLASSIFICATION

The study was done in urban area and modified B.G. Prasad's classification was used for socio economic classification, based on the per capita monthly income of the family.

The calculation was done as follows:
Centre wise Consumer Price Index for Chennai for the month of April 2014 = 223

Multiplying factor =

Current index value (223) / Base index value in 2001 (100) = 2.23.

Modified BG Prasad's classification for April 2014 -

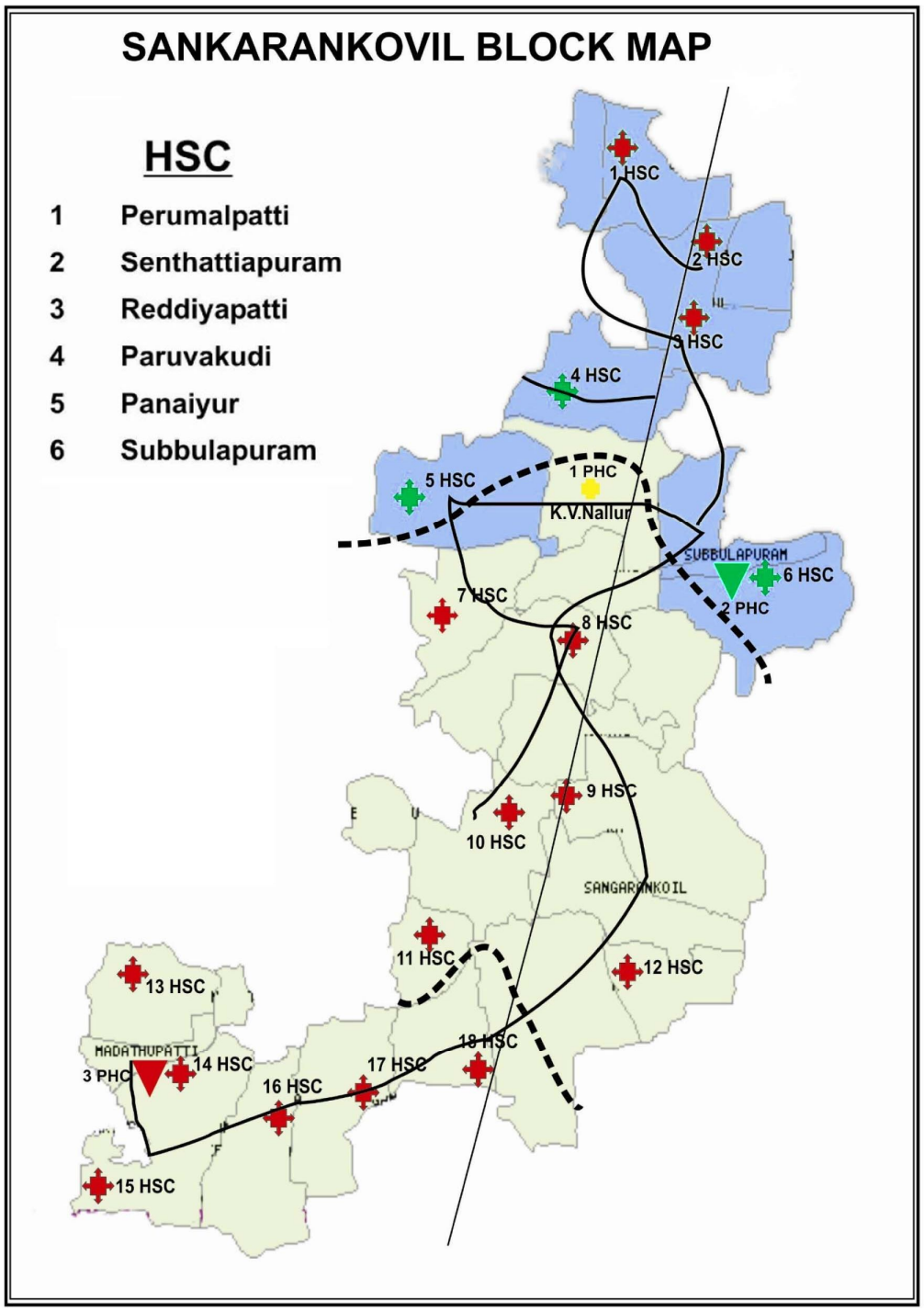
New income value = 2.23 × (old value × 4.63 × 4.93)

[Correction Factor (CF) = 4.93]

CLASS	OLD CLASSIFICATION 1961 (Rs./m)	FOR APRIL 2014 (Rs./m)
I	100 & above	5090 & above
II	50-99	2545 - 5089
III	30-49	1527 - 2544
IV	15-29	764 – 1526
V	<15	< 764

ANNEXURE 4

STUDY AREA MAP



ANNEXURE 5

LISTOF PRIMARY HEALTH CENTERS IN SANKARANKOVIL HUD

S.NO	PHC NAME
1	ALANGULAM
2	VEERANAM
3	NETTUR
4	UTHUMALAI
5	CHOKKAMPATTI
6	IDAIKAL
7	URMENIALAGIAN
8	ELATHUR
9	ACHANPUTHUR
10	SAMBAVAR VADAKARAI
11	PULIYARAI
12	KARIVALAMVANDANALLUR
13	**SUBBULAPURAM**
14	MADATHUPATTI
15	KURIVIKULAM
16	KALINGAPATTI
17	SAYANMALAI
18	PAVOORCHATHRAM
19	MADIYANOOR
20	V.K.PUTHUR
21	ARIYAPAPURAM
22	SENDAMARAM
23	KURUKALPATTI
24	VANNIKONENDAL
25	V.K.PIDAGAI
26	S.P.PURAM
27	VALLAM
28	VASUDEVANALLUR
29	RAYAGIRI
30	THALAIVANKOTTAI
31	THENMALAI

LIST OF SUBCENTERS IN SUBBULAPURAM PHC WITH TOTAL POPULATION

S.NO.	SUB CENTERS	TOTAL VILLAGES	TOTAL POPULATION
1	Subbulapuram	5	5609
2	Panaiyoor	8	4941
3	Paruvakudi	8	5500
4	Reddiapatti	5	4994
5	Senthatiapuram	7	4626
6	Perumalpatti	4	5285
TOTAL		37	30955

ANNEXURE: 6

LIST OF CLUSTERS

S.NO.	VILLAGES	TOTAL POPULATION	CUMULATIVE POPULATION
1	**Keelavayali**	**1144**	**1144**
2	**subbulapuram**	**2366**	**3510***
3	Melavayali	589	4099
4	**Sankaralingapuram**	**668**	**4767**
5	**Lakshmiyapuram**	**842**	**5609**
6	**Panaiyoor**	**1956**	**7565**
7	**Chokalingapuram**	**846**	**8411**
8	Meenatchipuram	245	8656
9	**Gomathimuthupuram**	**895**	**9551**
10	Naduyoor	125	9676
11	Vengatachalapuram	215	9891
12	**VeyialiMita**	**435**	**10326**
13	Sivagnapuram	224	10550
14	Paruvakudi	958	11508
15	**Seenikulam**	**2070**	**13578***
16	Opanialpuram	814	14392
17	**Mahalingapuram**	**350**	**14742**
18	Chinna Opanialpuram	463	15205
19	Sivalingapuram	243	15448
20	Pootalpatti	267	15715
21	**Subbramaniapuram**	**335**	**16050**
22	**Reddiapatti**	**1665**	**17715**
23	**Panthpooli**	**1220**	**18935**
24	KottaiNachiyapuram	621	19556
25	**Palvananathpuram**	**461**	**20017**
26	**EttiChery**	**1027**	**21044**

27	**Senthatiapuram**	**1817**	**22861**
28	**Valavanthamkulam**	**1066**	**23927**
29	Karisalkulam	340	24267
30	Solaichery	389	24656
31	**Vijayarengapuiram**	**345**	**25001**
32	Vadamalapuram	342	25343
33	Gopalpuram	327	25670
34	**Perumalpatti**	**1743**	**27413***
35	**Mangudi**	**2866**	**30279***
36	Velayathpuram	249	30528
37	Varagunaramapurm	427	30955

-* Two clusters were taken from the villages.

- Villages given in bold letters were the selected clusters.

ANNEXURE 7

KEY TO MASTER CHART

S.No	Serial number	1,2,3,etc.
Age	Age of the participant	1,2,3,etc.
Age category	Age category	1) 0-5 2) 6-14 3) 15-24 4) 25-45 5) 46-60 6)>60
Sex	Gender	1. Male, 2.Female.
Education	Education of the participant	1) Illiterate 2) I-V 3) VI-X 4) XI-XII 5) Diploma 6) Degree 7) PG Degree 8) Not applicable
Occupation	Occupation of the participant	1)Not working 2) Unskilled 3) Semi skilled 4) Skilled 5) Self-employed 6) Student 7) Semi-professional 8) Professional 9) Retired 10)Housewife 11) NA
Marital status		1. Yes 2. No
Ses status	Socio economic status	1,2,3,4,5.
PCI	Per capita income per month in rupees	
Family type	Type of the family	1) Nuclear 2) Joint family
Religion	Religion of the participant	1)Hindu 2) Muslim 3) Christian
House type	Type of house	1)Kaccha 2) Semi-pucca 3) Pucca
Room numbers	Number of rooms in a house	1) 1 2) 2 3) 3 4) >3
Fuel type	Type of fuel used for cooking	1)Electricity/LPG/Biogas 2)Wood/Charcoal/Kerosene
Separate kitchen	Presence of separate kitchen	1) Yes 2) No
Lighting source	Source of lighting	1) Electricity 2) kerosene 3)oil
Slippery floor	Presence of slippery floor	1) Yes 2) No
Sharps reach	Sharps within reach	1) Yes 2) No
Open fire	Presence of open fire	1) Yes 2) No
Kerosene storage	Storage of kerosene in familiar containers	1) Yes 2) No
Medications access	Easy accessibility to medications in the house	1) Yes 2) No
Electrical outlet	Presence of electrical outlets within reach	1) Yes 2) No
Water storage	Storage of water in large	1) Yes 2) No

	containers without lid	
Drainage nearby	Presence of drainage near the house	1) Yes 2) No
Double exit	Presence of double exit in the house	1) Yes 2) No
Met accident	Met with domestic accident	1) Yes 2) No
Hospitalised	Hospitalised for domestic accident	1) Yes 2) No
Died due to accident	Death due to domestic accident	1) Yes 2) No
Causes of accident	Types or causes of domestic accident	1) Falls 2) Burns 3) Drowning 4) Poisoning 5) Electrical injury 6) Fall of external objects 7) Injury from sharp or pointed instruments 8) Animal/ insect related injuries
Fall	Fall injury	1) Yes 2) No
Burns	Burn injury	1) Yes 2) No
Drowning	Drowning	1) Yes 2) No
Poisoning	Poisoning	1) Yes 2) No
Electric injury	Electrical injury	1) Yes 2) No
Fall of objects	Injury due to fall of external objects	1) Yes 2) No
Injury by sharps	Injury due to sharp objects	1) Yes 2) No
Animal injury	Injury due to animals	1) Yes 2) No
Nature	Nature of injury due to domestic accident	1) Abrasion2) Laceration 3) Contusion 4) Fracture 5) Crush Injury6) Sprain 7) Others(specify) 8) If burns__%
Activity	Activity during accident	1) Household works 2) Rest 3) Bathing 4) Gardening 5) Leisure Activities 6) Eating And Drinking
Alcohol influence	Under the influence of alcohol during accident	1) Yes 2) No
Physical impairment	Presence of any physical impairment during accident	1) Yes 2) No
Medical illness	Medical illness during accident	1) Yes 2) No
Mental illness	Mental illness during accident	1) Yes 2) No
On medications	On chronic medications during accident	1) Yes 2) No
So-poisoning	Source for poisoning	1)Insecticide2) Kerosene3) Drugs 4) Dish washer/detergents

So-falls	Source of fall accident	1)at the level of floor 2) fall from height
So-burns	Source for burns	1) Open Flame2) Hot Liquids 3) Hot Objects 4) Steam
So-drowning	Source for drowning	1) Big water storage container 2) Well 3) Pond 4) Sump 5) Overhead tank
So-animals	Source for injury due to animals	1)dog bite 2) snake bite 3) cow/buffalo 4) others
So-electrical injury	Source for electrical injury	1)electrical outlet
So-sharps	Source of injury due to sharps	1) Knife2) Blade 3) Sickle4) others
So-fall of objects	Source for injury due to fall of objects	
Source of injury	Source of domestic accidents	
Place of accident	Place of accident	1) Kitchen 2) Bathroom 3) Living room 4) Terrace 5) Immediate surroundings 6) Others
Time of accident	Time of accident	1) 6-12am 2)12-6pm 3) 6-12pm 4)12-6am
Body parts	Parts of body involved in injury	1)Head & Neck 2)Thorax 3)Abdomen 4) Back 5) Upper Limbs 6) Lower Limbs 7) Genitals 8) Spine and vertebral column
Place of treatment	Place of treatment taken	1) Home 2) Government hospital 3) Private hospital 4) Traditional medicine
Type of treatment	Type of treatment taken	1) Outpatient care 2) Inpatient care 3) Home remedies 4) Traditional medicine
Duration of treatment	Duration of treatment	1)<1day 2)1-7days 3)>7days
Duration of hospitalisation	Duration of hospitalisation	1)<1day 2)1-7days 3)>7days 0) not required
Outcome	Outcome of treatment	1) Improved 2) Improving 3) Disability/Deformity 4) Dead
Mode of transport	Mode of transport used	1) Private vehicle-auto, taxi 2) Own vehicle 3) Public transport 4) Ambulance

ANNEXURE 8 - MASTER CHART

age	age category	sex	education	occupation	marital status	ses status	PCI	family type	religion	house type	room numbers	fuel type for cooking	separate kitchen	lighting source	slippery floor	sharps reach	open fire	kerosene storage	medications access	electrical outlet	water storage	drainage nearby	double exit	met accident	hospitalised	died due to accident	causes of accident	fall	burns	drowning	poisoning	electric injury	fall of objects	injury by sharps	animal injury	nature of injury	activity	alcohol influence	physical impairment	medical illness	mental illness	on medications	so-poisoning	so-fall	so-burns	so-drowning	so-animal injury	so-electric injury	so-sharps	so-fall of objects	source of injury	place of accident	time of accident	body parts involved	place of treatment	type of treatment	duration of treatment	duration of hospitalised	outcome	mode of transport
57	5	1	3	4	1	1	5400	1	1	3	3	1	1	1	2	2	2	2	2	2	1	1	2	2	2	2																																						
42	4	2	1	10	1	1	5200	1	1	3	3	1	1	1	2	2	2	2	2	2	1	2	2	2	2	2																																						
23	3	1	6	8	2	1	5600	1	1	3	3	1	1	1	2	2	2	2	2	2	1	2	2	2	2	2																																						
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ANNEXURE 9

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Character count:	102,884
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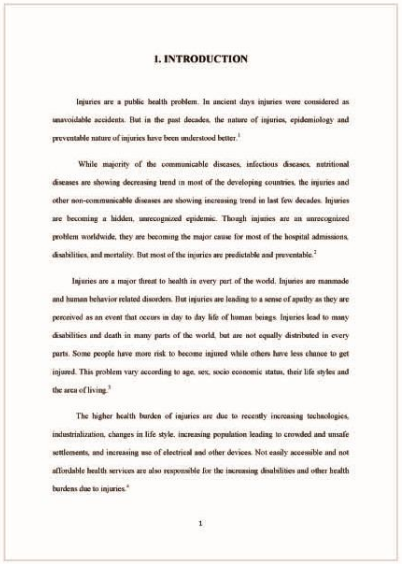
Submission ID:	454670787



1. INTRODUCTION

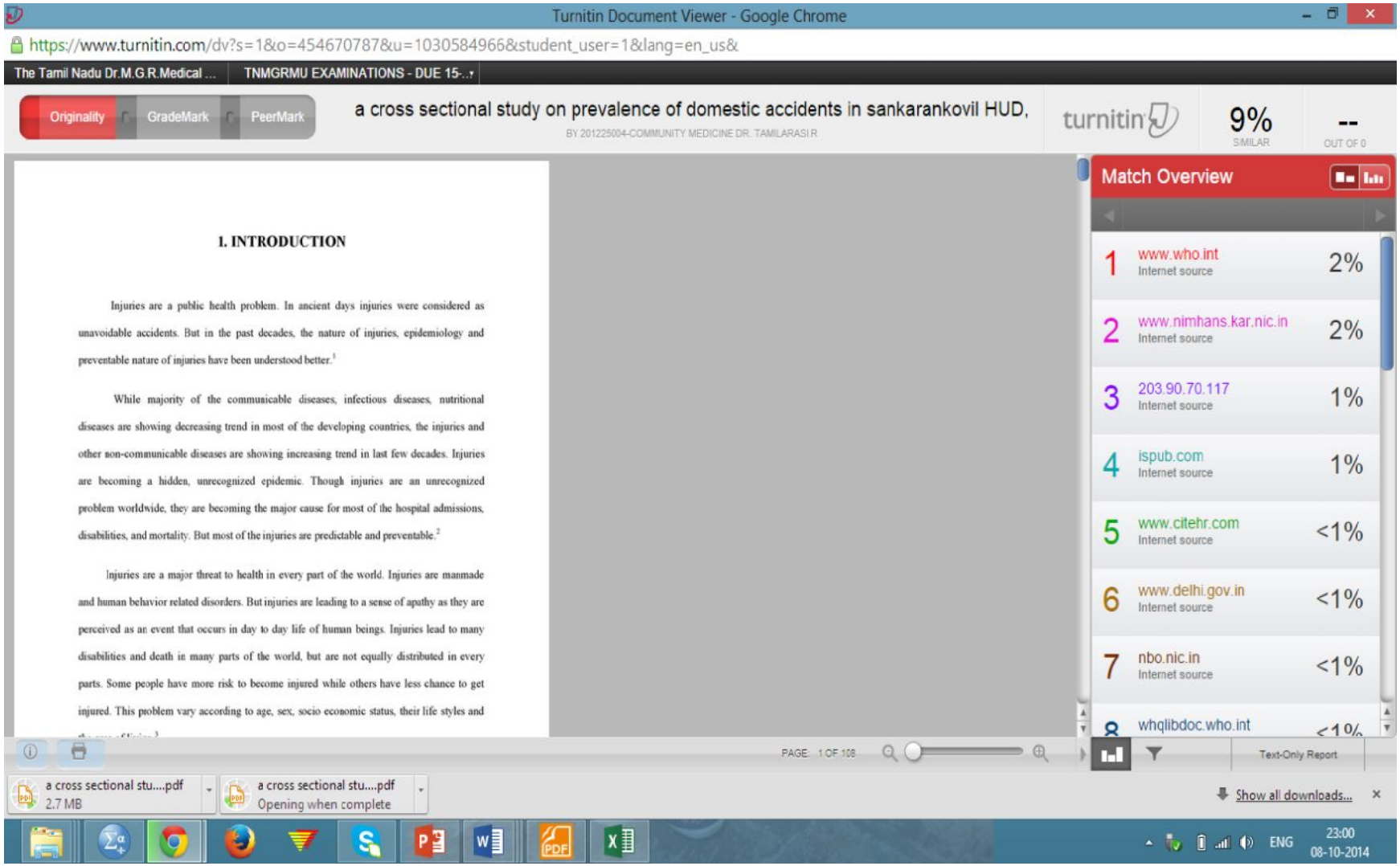
Injuries are a public health problem. In ancient days injuries were considered as unavoidable accidents. But in the past decades, the nature of injuries, epidemiology and preventable nature of injuries have been understood better.[1]

While majority of the communicable diseases, infectious diseases, nutritional diseases are showing decreasing trend in most of the developing countries, the injuries and other non-communicable diseases are showing increasing trend in last few decades. Injuries are becoming a hidden, unrecognized epidemic. Though injuries are an unrecognized problem worldwide, they are becoming the major cause for most of the hospital admissions, disabilities, and mortality. But most of the injuries are predictable and preventable.[2]

Injuries are a major threat to health in every part of the world. Injuries are manmade and human behavior related disorders. But injuries are leading to a sense of apathy as they are perceived as an event that occurs in day to day life of human beings. Injuries lead to many disabilities and death in many parts of the world, but are not equally distributed in every parts. Some people have more risk to become injured while others have less chance to get injured. This problem vary according to age, sex, socio economic status, their life styles and the area of living.[3]

The higher health burden of injuries are due to recently increasing technologies, industrialization, changes in life style, increasing population leading to crowded and unsafe settlements, and increasing use of electrical and other devices. Not easily accessible and not affordable health services are also responsible for the increasing disabilities and other health burdens due to injuries.[4]

1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a cross sectional study on prevalence of domestic accidents in sankarankovil HUD,
BY 201225004-COMMUNITY MEDICINE DR. TAMILARASI.R
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1. INTRODUCTION
Injuries are a public health problem. In ancient days injuries were considered as unavoidable accidents. But in the past decades, the nature of injuries, epidemiology and preventable nature of injuries have been understood better.[1]
While majority of the communicable diseases, infectious diseases, nutritional diseases are showing decreasing trend in most of the developing countries, the injuries and other non-communicable diseases are showing increasing trend in last few decades. Injuries are becoming a hidden, unrecognized epidemic. Though injuries are an unrecognized problem worldwide, they are becoming the major cause for most of the hospital admissions, disabilities, and mortality. But most of the injuries are predictable and preventable.[2]
Injuries are a major threat to health in every part of the world. Injuries are manmade and human behavior related disorders. But injuries are leading to a sense of apathy as they are perceived as an event that occurs in day to day life of human beings. Injuries lead to many disabilities and death in many parts of the world, but are not equally distributed in every parts. Some people have more risk to become injured while others have less chance to get injured. This problem vary according to age, sex, socio economic status, their life styles and
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ANNEXURE 10

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI-3

EC Reg No.ECR/270/Inst./TN/2013
Telephone No : 044 25305301
Fax : 044 25363970

CERTIFICATE OF APPROVAL

To
Dr. R. Tamilarasi,
Post Graduate in MD Community Medicine,
Institute of Community Medicine,
Madras Medical College,
Chennai – 600003.

Dear Dr. R. Tamilarasi,

The Institutional Ethics Committee has considered your request and approved extension of the study titled **"A cross sectional study on prevalence of domestic accidents in Sankarankovil Taluk in Tirunelveli District - 2014"** No. 37062014.

The following members of Ethics Committee were present in the meeting held on 03.06.2014 conducted at Madras Medical College, Chennai-3.

1.	Dr. C. Rajendran, M.D.	-- Chairperson
2.	Dr. R. Vimala, M.D., Dean, MMC, Ch-3.	-- Deputy Chair Person
3.	Prof. Kalaiselvi, MD., Vice-Principal, MMC, Ch-3	-- Member
4.	Prof. Nandhini, M.D. Inst. of Pharmacology, MMC, Ch-3.	-- Member
5.	Dr. G. Muralidharan, Director Incharge , Inst. of Surgery	-- Member
6.	Prof. Md Ali, MD., DM., Prof & HOD of MGE, MMC, Ch-3.	-- Member
7.	Prof. Ramadevi, Director i/c, Biochemistry, MMC,Ch-3.	-- Member
8.	Prof. Saraswathy, MD., Director, Pathology, MMC, Ch-3.	-- Member
9.	Prof. Tito, Director, i/c. Inst. of Internal Medicine, MMC	-- Member
10.	Thiru. Rameshkumar, Administrative Officer	-- Lay Person
11.	Thiru. S. Govindasamy, BABL, High Court, Chennai-1.	-- Lawyer
12.	Tmt. Arnold Saulina, MA MSW	-- Social Scientist

We approve the proposal to be conducted in its presented form.

Sd/Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE
CHENNAI-600 003

Member Secretary, Ethics Committee

ANNEXURE 11

PERMISSION LETTER FROM DPH

DEPARTMENT OF PUBLIC HEALTH AND PREVENTIVE MEDICINE

From
Dr.K.Kolandaswamy, MBBS, M.A.E,DPH,DIH,
Director of Public Health and
Preventive Medicine
359, Anna Salai
Chennai-600 006.

To
The Director,
Institute of Community Medicine,
Madras Medical College &
RGGGH,
Chennai-600 003.

R.No. 027444/SBHI-II/S3/14 Dated:05/06/14.

Sir,

Sub: Public Health -SBHI- Dr.R.Tamilarasi, MD III year Community Medicine, Institute of Community Medicine, Madras Medical College, Chennai-Permission to conduct study on "prevalence of domestic accident in Sankarankoil in Tirunelveli District -2014" for Project work-regarding.

Ref: 1. Letter Received from Dr.R.Tamilarasi, MD III year Community Medicine, Institute of Community Medicine, Madras Medical College, Chennai.
2. G.O.(D) No.648 Health and Family Welfare Department, Chennai-9. Dated 02/06/09.

With reference to the letter cited permission is accorded to Tmt.R.Tamilarasi, MD III year Community Medicine, Institute of Community Medicine, Madras Medical College, Chennai to conduct "A Study on prevalence of domestic accident in Sankarankoil in Tirunelveli District -2014".

With the following conditions:-

1. The data should be kept confidential and the report should not be published without the permission of the Government.

2. The Data should be used for the Project work only.

3. Study report should be submitted to the Director of Public Health and Preventive Medicine.

4. If there is any deviation in the above action, action will be taken against the individual.

5. The study should not be detrimental to normal functioning of the Institution.

6. The views of the department should be obtained before finalizing the report for submission.

7. Progress of data collection should be appraised at each stage.

8. Study should have institutional ethics committee approval.

9. Consent form should be obtained from the study participant after giving the information sheet.

Yours faithfully,

9/6/14

For Director of Public Health and
Preventive Medicine, Chennai – 6.

Copy to:
Deputy Director of Health Service, Sankarankoil Health Unit District.

Copy to

Tmt.R.Tamilarasi,
MD III year Community Medicine,
Institute of Community Medicine,
Madras Medical College,
Chennai

R.No. 027444/SBHI-II/S3/14

Office of the Director of Public Health and Preventive Medicine, Chennai- 6.

Dated: 05/06/14.

Sub: Public Health -SBHI- Dr.R.Tamilarasi, MD III year Community Medicine, Institute of Community Medicine, Madras Medical College, Chennai-Permission to conduct study on "prevalence of domestic accident in Sankarankoil in Tirunelveli District -2014" for Project work-regarding.

Ref: 1. Letter Received from Dr.R.Tamilarasi, MD III year Community Medicine, Institute of Community Medicine, Madras Medical College, Chennai.
2. G.O.(D) No.648 Health and Family Welfare Department, Chennai-9. Dated 02/06/09.

Attention of the Deputy Director of Health Service Sankarankoil Health Unit District is invited and it is informed that Dr.R.Tamilarasi, MD III year Community Medicine, Institute of Community Medicine, Madras Medical College, Chennai is taking up "A Study on prevalence of domestic accident in Sankarankoil in Tirunelveli District -2014".

Upon perusal of the request permission to take up study has been granted with the following conditions:-

1. The data should be kept confidential and the report should not be published without the permission of the Government.
2. The Data should be used for the Project work only.
3. Study report should be submitted to the Director of Public Health and Preventive Medicine.
4. If there is any deviation in the above, action will be taken against the individual.
5. The study should not be detrimental to normal functioning of the Institution.

6. The views of the department should be obtained before finalizing the report for submission.
7. Progress of data collection should be appraised at each stage.
8. Study should have institutional ethics committee approval.
9. Consent form should be obtained from the study participant after giving the information sheet.

It is requested to provide necessary data to undertake the study to Dr.R.Tamilarasi, MD III year Community Medicine, Institute of Community Medicine, Madras Medical College, Chennai and inform the fact to this office without fail.

K.Kolandaswamy
Director of Public Health and
Preventive Medicine, Chennai-6.

TO:
Deputy Director of Health Services.
Sankarankoil Health Unit District.

Copy to
1.Deputy Director of Health Services, Thirunelveli District.

2.The Director,
Institute of Community Medicine,
Madras Medical College & RGGGH,
Chennai 600 003.

3. Dr.R.Tamilarasi,
MD III year Community Medicine,
Institute of Community Medicine,
Madras Medical College, Chennai

//true copy forwarded//

3/9/14

For Director of Public Health and
Preventive Medicine, Chennai-6.

ANNEXURE 12

PERMISSION LETTER FROM DDHS, SANKARANKOVIL HUD

R.No.2426/A1/2012

Office of the Deputy Director of
Health Services, Sankarankoil.

Dated: 16.6.2014.

Sub : Public Health – Dr.R.Tamilarasi, MD-III year Community Medicine, Institute of Community Medicine, Madras Medical College, Chennai – Permission to Conduct study on 'Prevalence of domestic accident in Sankarankoil in Tirunelveli District 2014' for Project work – Regarding.

Ref : R.No.027444/SBHI-II/S3/14 dated.5.6.14 of the Director of Public Health and Preventive Medicine, Chennai-6.

In the reference cited, permission has been granted to Dr.R.Tamilarasi, MD-III year Community Medicine, Institute of Community Medicine, Madras Medical College, Chennai for taking up "A study on Prevalence of domestic accident in Sankarankoil in Tirunelveli District 2014' and hence Dr.R.Tamilarasi is permitted to proceed the Project work in Sankarankoil Health Unit District.

16.6.14

Deputy Director of Health Services,
Sankarankoil.

To
Dr.R.Tamilarasi, MD-III year Community Medicine,
Institute of Community Medicine, Madras Medical College,
Chennai – 600 003.

Copy to the Director, Institute of Community Medicine ,
Madras Medical College & RGGGH,
Chennai – 600 003.
Copy submitted to the Director of Public Health and Preventive Medicine,
Chennai-6.